Wynn Everett

Everett, Massachusetts

Draft Environmental Impact Report

Volume I and II

EOEEA# 15060

December 16, 2013

submitted to **Executive Office of Energy and Environmental Affairs**

submitted by **Wynn MA, LLC**

prepared by **Fort Point Associates, Inc.**

in association with **Dirigo Group**
Wynn Design & Development, LLC
Lifescapes International, Inc.
RD Vanasse & Associates Inc.
GZA GeoEnvironmental, Inc.
Howard/Stein-Hudson Associates, Inc.
Norris & Norris Associates
Novus Environmental
Tech Environmental
Federal Airways & Airspace

Fort Point Associates, Inc.
Urban Planning · Environmental Consulting · Project Permitting

Fort Point Associates, Inc.
Urban Planning Environmental Consulting Project Permitting

December 16, 2013

Re: Wynn Everett
Draft Environmental Impact Report
EEA# 15060

Dear Reviewer:

We are pleased to submit the Draft Environmental Impact Report (DEIR) for Wynn Everett (the "Project") on behalf of Wynn MA, LLC. This document has been prepared to describe the proposed 2.6 million square foot hotel/resort and gaming facility to be located at 1 Horizon Way in Everett, Massachusetts.

The DEIR describes elements of the project, including potential environmental impacts and proposed mitigation measures to be provided in response to the Certificate of the Secretary of Energy and Environmental Affairs which was issued on July 26, 2013. The DEIR also describes the benefits that the Project will bring to the City of Everett and the region.

Comments regarding this document should be directed no later than January 17, 2014 to:

Secretary Richard K. Sullivan, Jr.
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office/ MEPA Reviewer
100 Cambridge Street, Suite 900
Boston, MA 02114

Printed copies of this DEIR may be obtained from Fort Point Associates at the address listed below, or by contacting me at: jkohn@fpa-inc.com.

Sincerely,

Judith T. Kohn, RLA
Senior Project Manager
Fort Point Associates, Inc.

Cc. Jacqui Krum, Wynn MA, LLC
encl. Wynn Everett DEIR

33 Union Street, 3rd Floor Boston, Massachusetts 02108 617-357-7044

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Everett, Massachusetts

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100 Cambridge Street, Suite 900
Boston, Massachusetts 02114

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DRAFT ENVIRONMENTAL IMPACT REPORT

Chapter 1

INTRODUCTION

CHAPTER 1: INTRODUCTION

1.1 PROJECT IDENTIFICATION

Project Name: Wynn Everett

Address/Location: One Horizon Way, Everett, Massachusetts

1.2 PROJECT SUMMARY

Wynn MA, LLC (the "Proponent") is the developer of the proposed Wynn Everett casino and resort project (the "Project") on an approximately 33.9 acre site (the "Project Site") located on Horizon Way off Lower Broadway (Route 99) in Everett, Massachusetts. See Figure 1-1, USGS Locus. The Project, which is comprised of approximately 25.6 acres of upland and 8.3 acres below mean high water on the Mystic River, was previously part of the Monsanto chemical manufacturing facility. The Project Site is currently undeveloped and is utilized in part as a materials storage yard. See Figure 1-2, Locus Aerial and Figures 1-3 and 1-4, Existing Site Conditions.

The Project will consist of a luxury hotel with 500 rooms, a gaming area, retail space, food and beverage outlets, convention and meeting space, a spa and gym, nightclub and parking and drop-off areas. In addition, extensive landscape and open space amenities are planned including a public gathering area with an outdoor amphitheater and gazebo, waterfront features, a public harborwalk and water transportation docking facilities. The Project will also provide off-site benefits, including extensive transportation improvements and continuation of the harborwalk/multi-use path connections to the DCR Gateway Park. The Project is proposed to be developed in a single phase. For a detailed description of the Project, see Chapter 2, Project Description.

If successful in procuring a gaming license under the provisions of M.G.L. chapter 23K, (the "Gaming Act"), the Proponent proposes to redevelop, construct, and operate a Category 1 gaming establishment on the Project Site. In order to initiate this process, in January 2013, the Proponent paid the required fee and submitted its RFA-1 suitability application to the Massachusetts Gaming Commission (the "Gaming Commission"). In support of that proposal, the Proponent filed an Expanded Environmental Notification Form ("EENF") on May 31, 2013, and is filing this Draft Environmental Impact Report ("DEIR") with the Executive Office of Energy and Environment ("EOEEA") under the Massachusetts Environmental Policy Act ("MEPA").

The Proponent entered into a Host Community Agreement with the City of Everett ("Everett") on April 19, 2013 (the "Host Community Agreement"), which was approved by the citizens of Everett pursuant to a referendum held on June 22, 2013, in accordance with

the Gaming Act. The Project will bring significant investment to the Everett and its surrounding communities by providing approximately 4,000 construction and 4,000 permanent jobs or "positions" with local hiring preferences, improved and expanded infrastructure, and support for a myriad of community programs and services. Pursuant to the Gaming Act, a portion of the taxes on the Project's gaming revenue will be allocated to a community mitigation fund. Many of the public benefits associated with the Project are identified in the Host Community Agreement, . In addition, the Proponent entered into a Surrounding Community Agreement with the City of Malden on November 12, 2013 and has also initiated and further advanced discussions with the communities of Medford, Boston, and Chelsea in anticipation of indentifying adversely impacted surrounding communities and executing surrounding community agreements with such communities in accordance with the Gaming Act. Both the agreements with Everett and Malden are included as Appendix D, Community Agreements.

The Project will act as a catalyst for the following public benefits: (i) capital investments designed to improve transportation infrastructure, (ii) economic benefits from recurring taxes, a PILOT payment and other community payments, (iii) direct and indirect employment opportunities, and (vi) environmental benefits. These public benefits are further described in Chapter 2, Project Description and Chapter 17, Mitigation Measures.

The Project will transform the Project Site from a blighted waterfront brownfield that has sat dormant for many years into a vital public gathering space and economic engine for the region. Development of the Project will serve to anchor and support the Everett Lower Broadway Master Plan (the "LBD Plan") as it moves toward formal approval during the last quarter of 2013 as well as the Everett Central Waterfront Municipal Harbor Plan (the "Everett MHP"), which is expected to be in effect in early 2014.

The Project's design and construction will be consistent with local and regional long-range planning efforts to stimulate development of the underutilized segment of the Mystic River waterfront that contains the Project Site.

The Proponent has reviewed a number of planning studies and initiatives that include the land containing the Project Site. While differing in their geographical scope and authorship, these plans have consistently identified the Project Site as a location with tremendous potential to transform Everett, especially the Lower Broadway and waterfront areas of Everett. This DEIR describes the current Project program and also summarizes components of the Project that relate to the interests of the Commonwealth as detailed in MEPA with regard to waterfront access, environmental cleanup, open-space opportunities, improved transportation networks, water and sewer use, land impacts, expanded bicycle and pedestrian pathways, economic revitalization and job creation.

1.3 CHANGES TO THE PROJECT PROGRAM SINCE THE ENVIRONMENTAL NOTIFICATION FORM

During the project planning stages, the Proponent thoughtfully evaluated a number of options regarding the size and scale of the Project. The program selected for analysis in the EENF (the "EENF Program") was comprised of a development proposal (551 hotel rooms) likely to achieve a cost-benefit ratio to enable the realization of the many mitigation and public benefits detailed in the EENF and in the Host Community Agreement.

During the course of project planning and environmental review, the Project needs were evaluated more thoroughly and the Proponent identified an opportunity to explore an optimized project program. This modified project program (the "DEIR Program") reduces some of the components of the Project but increases the area of landscaped open space adjacent to the harborwalk, providing additional areas for public use on the Project Site. A more detailed description of the EENF Program and Project Alternatives is provided in Chapter 3, Project Alternatives.

The DEIR Program is comprised of the same elements as the EENF Program. Refinements to economic and demographic projections have yielded fewer overall rooms in the hotel but an increased number of suites yielding more total square footage in the hotel tower than in the EENF Program. Gaming, food and beverage, convention and meeting space and other amenities remain the same or very similar to the EENF Program. Retail uses in the DEIR Program have been reduced to meet more realistic market projections. The reduced retail program provides an opportunity to create more open space associated with the harborwalk on the Project Site. As in the EENF Program, primary access to the site will be provided by way of a boulevard-type driveway that will interect the west side of Lower Broadway (Route 99) just north of Horizon Way opposite Mystic Street. The DEIR Program proposes a secondary point of access by way of a driveway that will also intersect the west side of Lower Broadway north of the primary Project Site driveway. See Figure 1-3 and 1-4, Existing Site Conditions.

A downward adjustment in the number of on-site parking spaces reflects the plan to provide employee parking off-site. On-site amenities, including open space, landscape, harborwalk, docking facilities, and gathering spaces have remained consistent with the EENF Program, but with significant positive adjustments to the harborwalk and shoreline treatments. For example, a substantial buffer has been developed between the proposed harborwalk and the high tide line to allow for a "living shoreline" of salt marsh or other vegetation to be established on the harborside peninsula. In addition, plans to re-establish shellfish beds in the intertidal zones will be advanced in future planning stages.

1.3.1 DEIR PROJECT PROGRAM

The DEIR Program is consistent with the "Urban Wynn" project model. The Urban Wynn model promotes an integrated luxury environment and a high quality experience in an exciting urban setting. While other Wynn Resorts are strictly destinations, the Project will also capture a market of users who have a more general Boston area or New England destination, such as those traveling to the area for conventions, conferences, college and university visits, or vacations. The Project will provide strong links to other regional amenities. For these reasons the DEIR Program selected for analysis is more modest in scale than the Wynn Resort model which has been successfully implemented in other locations. The DEIR Program remains consistent with the "low-range" alternative that was advanced in the EENF.

The Project's hotel component will include 500 rooms, which range from 575 to 2,300 square feet, among the largest average room sizes in the Boston luxury hotel market. The Proponent will fill the retail mall with an optimal mix of local, national and international tenants. The retail and dining options will be programmed to appeal to both repeat guests and tourists that seek the "Wynn experience." The Proponent plans to market the Project to its international customers who spend time on the East Coast. The Proponent also has brand status in Asia with Wynn Macau, one of the few Forbes five-star hotels in China. The increasing visitation from Asian customers to the East Coast provides a strategic opportunity for the Project to capitalize on the Proponent's established brand recognition in Asia.

Minor modifications to the EENF Program that have been made to accommodate refinements to the Project are shown in Table 1-1, Comparison of EENF Program and DEIR Program, and described below.

The hotel has decreased by 51 rooms but an increased number of suites has increased the total square footage in the hotel tower from 613,244 square feet to 627,073 square feet. In addition, the hotel tower has increased in height by 86 feet to 386 feet. As with the EENF Program, the Project is comprised of two pedestrian-level tiers. The ground level (or "Casino Level") houses the gaming area, retail and food and beverage outlets. The gaming area has increased by 5,255 square feet to 167,880 square feet. Retail space has been reduced by 81,220 square feet to 89,140 square feet. Food and beverage space has been slightly reduced by 6,345 square feet to 57,591 square feet. Front-of-house including lobbies, lounges and the lobby garden has been increased by 11,613 square feet to 57,339 square feet. The spa and gym and convention and meeting rooms are located on the second pedestrian tier (the "Spa/Convention Center Level"), and have been reduced by 2,792 square feet to approximately 48,108 square feet. In addition, 3,485 parking spaces in the EENF Program have been increased by 224 spaces to 3,709, while employee parking, which was accommodated on-site in the EENF Program, has been allocated to 800

spaces off-site at either existing parking facilities or newly constructed lots. Open space would be lushly landscaped, or hardscape provided in the form of a harborwalk adjacent to the Mystic River. Landscaped open space has been increased by more than 69,000 square feet, and continues to be a featured amenity in the Project with the addition of a 20+ foot wide area landward of high tide at the terminus of the Project Site peninsula to accommodate new salt marsh construction and coastal bank restoration areas.

While the Project Site poses many challenges, among them several decades of contamination and neglect, if selected for the Commonwealth's Region A Category 1 Gaming License (the "Gaming License"), the Proponent and the Project will bring a dramatic and iconic feature to the Everett skyline and Greater Boston. Designed to be viewed from the nearby highways, waterways, and the Boston skyline, the unique and striking hotel tower, which has become more streamlined, will add a new landmark to the skyline of modern buildings visible from the Mystic River and beyond. The integration of luxury hotel, gaming, retail, dining and watersheet activation, and connection to bike and pedestrian paths and parks will help transform and re-energize the Everett waterfront after years of inactivity.

Table 1-1, Comparison of DEIR Program and EENF Program

Feature (In square feet unless noted*)	EENF Program	DEIR Program	Change (number)	Change (square feet)
Hotel Keys*	551 keys	500 keys	-51 keys	
Hotel Tower	613,244	627, 073		13,829
Gaming	162,625	167,880		5,255
Retail (includes hotel and gaming)	170,360	89,140		-81,220
Food/Beverage	63,936	57,591		-6,345
Convention/ Meeting	37,506	34,998		-2,508
Spa/Gym	13,394	13,110		-284
Entertainment	22,136	11,774		-10,362
Back-of-House	650,391	310,248		-236,658
Front-of-House Support (includes restrooms, lobbies, etc.)	45,726	57,339		11,654
Total Paring Spaces*	3,485	3,709	224	
Parking Spaces on-site*	3,485	2,909	-576	
Parking Spaces off-site*	0	800	800	
Parking	1,506,976	1,250,000		-256,976
Total On-Site GFA	**2,889,873**	**2,619,234**	N/A	**-270,639**

1.4 HOST COMMUNITY

As described in the EENF, Everett is the host community for the Project. The Project Site encompasses the gaming establishment premises, which are located entirely within the Everett. All proposed site improvements will be accommodated on the Project Site.

1.5 PROJECT PERMITTING

The Project is expected to require numerous local, state, and federal review processes. The Project has been developed in accordance with regulatory requirements and will undergo a thorough set of reviews to determine the potential environmental impacts and measures necessary to avoid and minimize those impacts as project planning and implementation proceeds.

Discussions with state and local permit authorities were initiated during the process of preparing the EENF. These discussions continue on a regular basis, with information supplied as needed and requested, to assist the authorities and agencies with their evaluations of impacts and appropriate mitigation measures to be required for issuance of the permits, reviews or approvals described in Table 1-2, Anticipated Permits, Reviews, and Approvals. See Chapter 17, Mitigation Measures for proposed Draft Section 61 Findings.

Table 1-2 contains a list of federal, state, and local agencies from which permits or other actions may be sought or to which filings may be made.

Table 1-2, Anticipated Permits, Reviews, and Approvals

Agency	**Permit, Review, or Approval**
Federal	
Federal Aviation Administration (FAA)	• Determination of No Hazard (DNH) or other Determination regarding Air Navigation ** o Building o Construction Crane
US Army Corps of Engineers (USACE)	• Work in Navigable Waters (Section 10) Permit • Clean Water Act (Section 404) Individual Permit • Massachusetts General Permit (GP) Category 2 o Off-site Work
US Environmental Protection Agency (EPA)	• National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) NOI (for stormwater management) o On-site o Off-site • NPDES Remediation General Permit (RGP) (for construction dewatering)
State	
Executive Office of Energy and Environmental Affairs	• Massachusetts Environmental Policy Act (MEPA) Review • Municipal Harbor Plan
Massachusetts Department of Environmental Protection (MassDEP)	• Chapter 91 Waterways License • Sewer Connection/Extension Permit • Notification of Construction and Demolition • Water Quality Certification (401) • Wetlands Order of Conditions
Massachusetts Office of Coastal Zone Coastal Zone Management (CZM)	• Federal Consistency Review
Massachusetts Historical Commission (MHC)	• Review of Project relative to potential effects on State Register historic/archaeological resource
Board of Underwater Archaeological Resources (BUAR)	• Review of proposed work and Project Site to determine if Reconnaissance Excavation or Special Use Permit(s) are necessary
Massachusetts Department of Conservation and Recreation (DCR)	• Permit for work on and/or access to DCR Park Lands and Roadways

Agency	Permit, Review, or Approval
Massachusetts Department of Transportation (MassDOT)	• MBTA Property Agreement • MBTA Land Disposition and Easement Agreements • Non-Vehicular Access Permit o Off-site roadway improvements
Massachusetts Aeronautics Division	• Airspace Review
Local	
City of Boston Public Improvements Commission (PIC)	• Approval for off-site roadway improvements
City of Boston Transportation Department (BTD)	• Approval for off-site roadway improvements
Everett Planning Board	• Site Plan Review • Urban Renewal Plan

Everett Conservation Commission	• Order of Conditions
	  o On-Site
	  o Off-Site

Everett Fire Department	• Review of Plans • Fire Suppression System Installation • Fuel Storage Permit • LP Gas Storage Permit • Underground Storage Tank Removal Permit (Commercial)
Everett Health Department	• Food Establishment Permit Application
Everett Licensing Commission	• Alcohol License • Common Victualler License
Everett Public Works	• Sewer Connection Permit • Water Connection Permit

1.6 PROJECT TEAM

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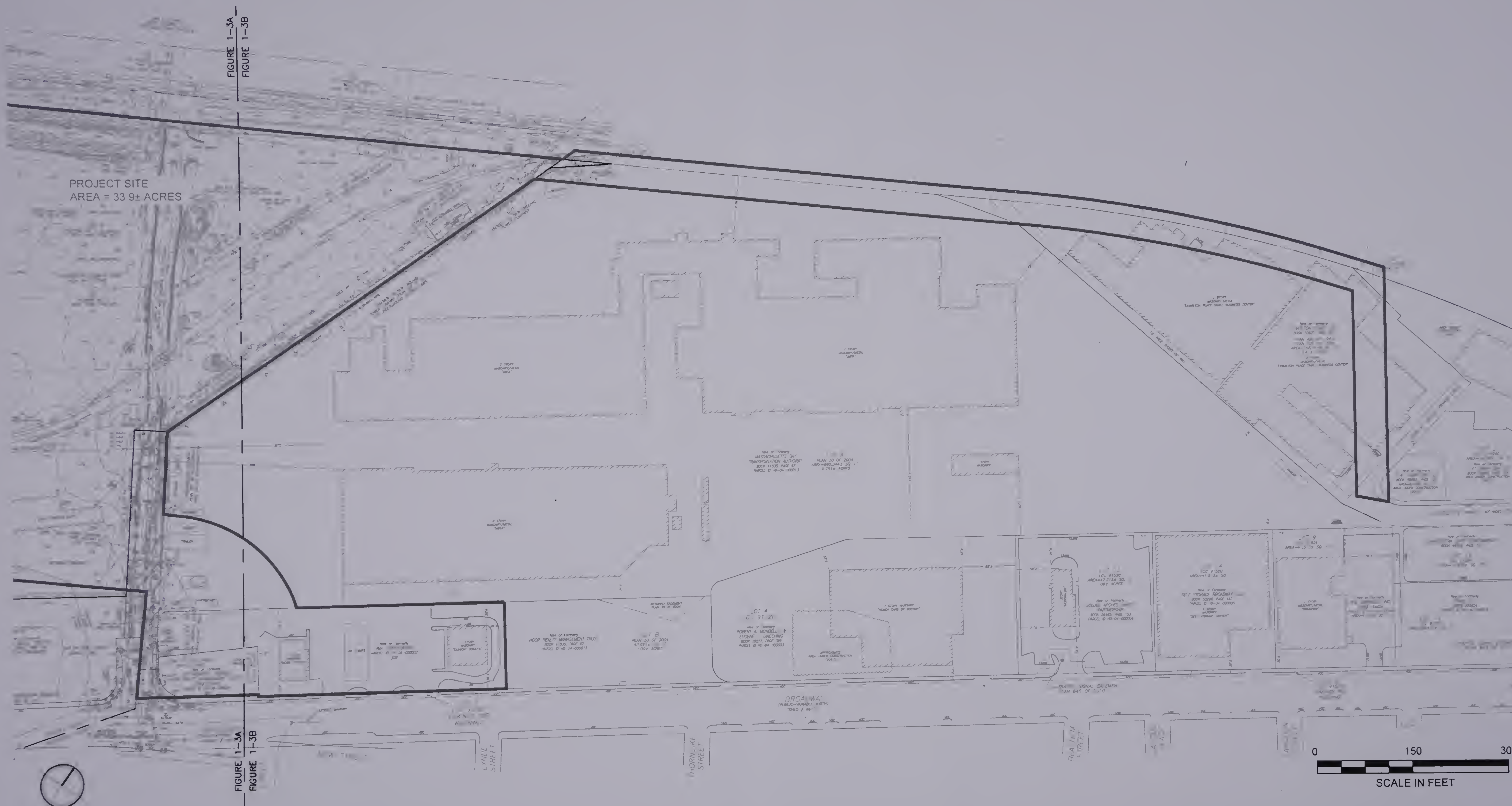
Figure 1-1
USGS Locus
Source: US Geological Survey, 1995

Wynn Everett
Everett, Massachusetts

Figure 1-2
Locus Aerial
Source: MassGIS, 2008

Figure 1-3
Existing Site Conditions (1 of 2)
Source: *Feldman Professional Land Surveyors, 2013*



Wynn Everett
Everett, Massachusetts

Figure 1-4
Existing Site Conditions (2 of 2)
Source: *Feldman Professional Land Surveyors, 2013*

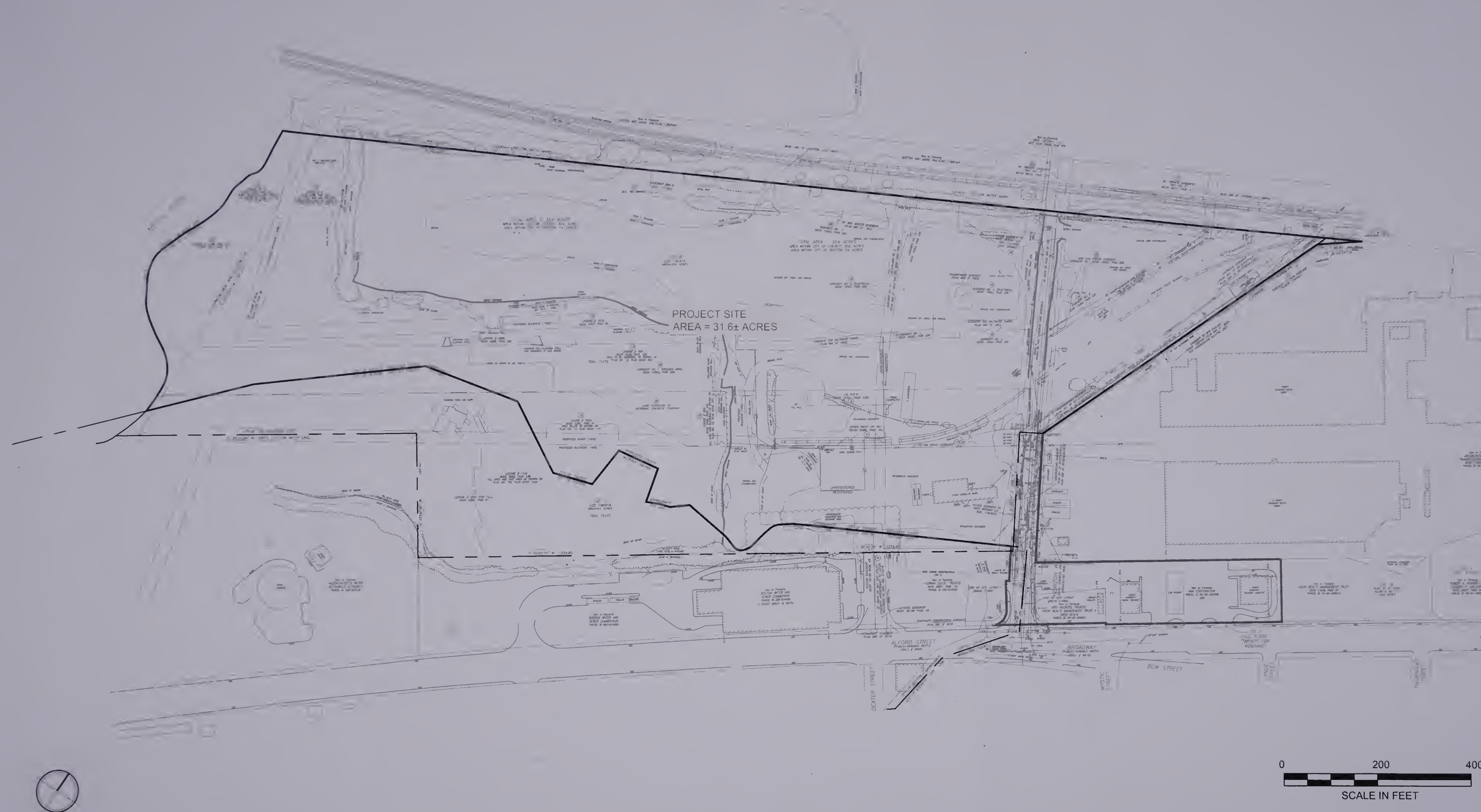


Figure 1-5
Alternative Site Conditions
Source: *Feldman Professional Land Surveyors, 2013*

Chapter 2

Project Description

CHAPTER 2: PROJECT DESCRIPTION

2.1 PROJECT SITE AND CONTEXT

The Project Site is a waterfront parcel totaling approximately 33.9 acres located in Everett, adjacent to the Mystic River. Approximately 25.6 acres are upland, surrounded by shoreline and the remnants of marine structures, and approximately 8.3 acres are below mean high water on the Mystic River. See Figures 2-1 and 2-2, Existing Site Conditions.

The Project Site is also bordered to the west by the tracks of the MBTA Newburyport commuter rail line. The upland portions of the Project Site are bounded by Horizon Way, Route 99, and commercial and institutional properties. For much of its history, the Project Site was used as a chemical production facility; a portion of the Project Site currently serves as a storage area for construction materials, and is presently undeveloped except for the presence of a construction trailer/office of approximately 5,200 square feet. The surficial material at the Project Site is comprised of a mix of soil and gravel. Most of the soils on the Project Site are disturbed and comprised of fill material. The Project Site also includes approximately 1,600 linear feet of shoreline. Within the shoreline is a mix of deteriorated stone seawalls, loose gravel and boulders, and rotted timber piers and pilings. The shallower portions of the shoreline also contain debris and remnants of timber structures. See Figure 2-3, Hydrographic Survey Plan.

Existing access to the Project Site is provided via Horizon Way (fka Chemical Lane) of Broadway (Route 99) in Everett. Access to the redeveloped Project Site will be provided by one of two configurations. The first configuration provides access via a location approximately 150 feet north of Horizon Way (fka Chemical Lane), which is currently an unsignalized intersection off Broadway (Route 99) in Everett, and a secondary access point approximately 1,400 feet north of Horizon Way, also off Broadway in Everett, as shown in Figure 2-1 and 2-2, Existing Site Conditions, and Figure 2-5, Conceptual Site Plan. The second configuration includes a single point of access off of Horizon Way in Everett. See Figure 2-4, Alternative Site Configuration. The final access configuration will be established based on the merit and feasibility of land acquisitions, which are pending. For consistency of descriptions, the first configuration is used in graphics and project descriptions throughout this DEIR. All entry points for the Project are proposed to be signalized. For additional information regarding access to the Project Site, see Chapter 4, Transportation.

The Project is situated in an urban, commercial/industrial area that suffered from economic disinvestment during the latter part of the twentieth century when manufacturing/import and fishery activities declined. Land uses surrounding and near the Project Site are primarily "small scale" commercial/retail, with local businesses (e.g., an auto dealership, restaurant, and auto repair shop), and infill residential structures nearby. Proximate uses include Boston

Water and Sewer Commission (BWSC) and Massachusetts Water Resources Authority (MWRA) properties, an MBTA service center to the north, and the Gateway Center and Gateway Park to the west.

2.2 STATE GAMING PROCESS

2.2.1 EXPANDED GAMING ACT

The Gaming Act was signed into law by Governor Deval Patrick on November 22, 2011 with the objective of providing economic investment and job creation in the Commonwealth. The Gaming Act provides for the licensing of up to three destination resort casinos (each, a "Casino") in three geographic locations within the Commonwealth, as well as one slots facility. The Gaming Commission has also been created to oversee the application and selection process. The Proponent is seeking a Gaming License to operate a Category 1 gaming establishment at the Project Site in Everett pursuant to the provisions of the Gaming Act.

By enacting the Gaming Act, the Massachusetts Legislature required that a number of protections be provided to the communities hosting and surrounding a Casino. These protections, which have been embraced by the Proponent, include: job creation, impact fees and other contributions, infrastructure and public transit improvements, environmental protection and remediation, and other contributions to the health and well-being of the community. One area where the Proponent plans to enhance and contribute to environmental protection and stewardship is in its proposed contribution to waterside amenities, shoreline restoration, and overall enhancement of public access to and use of the waterfront in Everett.

As required in the Gaming Act, the Proponent has signed a Host Community Agreement with and held a referendum in Everett. Everett has welcomed the Proponent and the Project with an overwhelming majority (86.7% of votes cast were in support of the Project) and continues to support the Project through the Gaming License application process.

2.2.2 GAMING APPLICTION PROCESS

The Gaming Act enables each applicant for a Gaming License to submit a two-phased application to the Gaming Commission along with a non-refundable $400,000 application fee for the initial application ("RFA-1"), and a commitment to pay the $85,000,000 license fee when awarded a Gaming License with the second phase of the application ("RFA-2"). The Proponent plans to submit the final application and fee no later than December 31, 2013. One of the pre-conditions to filing the RFA-2 application is the receipt of a Certificate on an Environmental

Notification Form from EOEEA. The Proponent filed an EENF on May 31, 2013 and received a Certificate from the Secretary of the EOEEA on July 26, 2013.

2.3 PROJECT DESCRIPTION

The Project comprises the construction of a 2,619,234 square foot integrated resort casino on the Project Site. The Project includes a 500-room, 386 foot high luxury hotel (627,073 square feet) and a gaming facility comprised of approximately 167,880 square feet. The gaming facility is expected to include 3,072 slot machines and 150 gaming tables (3,972 total gaming positions). The 500-room hotel will offer the largest average room sizes in the luxury hotel market in the Boston region with a standard room size greater than 600 square feet. Other features include 89,140 square feet of retail space, 57,591 square feet of food and beverage, including six restaurants and a nightclub, 34,998 square feet of convention and meeting space, a 13,110 square foot spa and gym, and a 5,322 square foot four-season atrium garden located at the main lobby entrance. An estimated 310,248 square feet of back-of-house space as well as 57,339 square feet of front-of-house service including front-of-the-house support, restroom space and lobby lounge will support the DEIR Program.

The Proponent proposes to construct a 1.25 million square foot parking structure below the Casino Level, with three below-grade levels and one at-grade level that will provide 2,909 self-serve and valet parking spaces. Employee parking will be accommodated with approximately 800 off-site spaces, with shuttle service to and from the Project Site.

Visitors will be able to access the hotel, retail, and dining areas without entering the gaming areas via the underground parking garage, passenger drop-off, or walking and biking to the ground floor main entrance to the building located at the porte cochere facing the Mystic River. Guests who enter the building via the main entrance will have the option of proceeding to the hotel lobby and elevators or continuing to the retail and restaurant areas on the peninsula wing of the Project. Those guests who wish to visit the gaming areas can enter directly from the underground garage or walk through the main lobby into the gaming area on the ground floor. See Figure 2-6, Casino Level Floor Plan.

Extensive outdoor landscape and open space amenities are an integral component of the Project. Waterfront features include: a harborwalk with planned off-site connections to the extensive public open space network along the Mystic River, overlooks to view restored coastal bank vegetation and salt marsh, a large open amphitheater with entertainment, gathering, and seating areas as well as water transportation and transient vessel docking facilities. Off-site improvements and amenities include the extension of the harborwalk to the DCR Gateway park as well as transportation, pedestrian and bicycle accommodations.

While the Project Site poses many challenges, among them several decades of contamination and neglect, if selected for the Commonwealth's Region A Gaming License, the Proponent and the Project will bring a dramatic and iconic feature to the Everett skyline

and Greater Boston. Designed to be viewed from the nearby highways, waterways, and the Boston skyline, the unique and striking hotel tower will add a new landmark to the modern buildings that are visible from the Mystic River and beyond. The combination of luxury hotel, gaming, retail, dining and watersheet activation, and connection to bike and pedestrian paths and parks will bring the Everett waterfront back to life after years of inactivity. See the following figures for illustrations of the Project description:]

Figure 2-5	Conceptual Site Plan
Figure 2-6	Casino Level Floor Plan
Figure 2-7	Spa/Convention Center Level Floor Plan
Figure 2-8	Roof Level Plan
Figure 2-9	High-Rise Floor Plan Levels 1-25
Figure 2-10	Harborwalk
Figure 2-11	Parking Level B1
Figure 2-12	Parking Levels B2 and B3
Figure 2-13	Parking Level B4
Figure 2-14	Perspective View from Mystic River
Figure 2-15	Perspective View of Porte Cochere
Figure 2-16	Perspective View from Entry Drive
Figure 2-17	Perspective View of Harbor Park
Figure 2-18	Perspective View of Port Cochere Approach
Figure 2-19	Perspective view of Atrium Winter Garden Interior
Figure 2-20	Overall East Elevation
Figure 2-21	Overall South Elevation
Figure 2-22	Overall North Elevation
Figure 2-23	Overall West Elevation
Figure 2-24	Landscape Plan

2.3.1 PROJECT PROGRAM

As described in 2.3, Project Description, the Project is comprised of a 2,619,234 square foot resort casino located in Everett, Massachusetts. The Casino Level houses the gaming area, retail and food and beverage outlets. The gaming area is 154,210 square feet, retail space is 89,140 square feet and food and beverage is 57,591 square feet. Front-of-house, including lobbies, lounges and the lobby garden are 57,339 square feet. The spa and gym and convention and meeting rooms are located on the Spa/Convention Center Level, and total 48,108 square feet. In addition, there are 3,709 parking spaces, with 800 employee parking spaces off-site at either existing parking facilities or newly constructed lots. Open space would be lushly landscaped, or hardscape provided in the form of a harborwalk promenade adjacent to the Mystic River. Landscaped open space has been increased by more than 69,000 square feet, and continues to be a featured amenity in the Project with the addition of a new salt marsh and coastal bank restoration area an area at the terminus of the Project Site peninsula.

Restored coastal bank vegetation, and new salt marsh will be established on the seaward side of the harborwalk. Connections from the harborwalk on the Project Site via a new multi-use path under the MBTA right-of-way are proposed to be constructed following completion of discussions with abutting property owners. See Figure 2-25, Proposed Pedestrian Connections. Accommodations are also provided for water transportation facilities, which are described in Section 2.3.6 and Chapter 4, Transportation. Water transportation service is currently being planned as a pilot project to provide waterside connections between the Project and locations in and around Boston.

2.3.2 PROJECT DESIGN

The Project has been thoughtfully designed to accommodate the needs of modern travelers on vacation as well as local residents who wish to enjoy the features of an integrated luxury resort currently unavailable in the region. The architecture for the Project offers a unique blend of classical and contemporary design as described in this section.

The proportions of the Project are focused at a human scale and are pedestrian-friendly. The large waterfront features with their lively pathways and animated plazas are lushly landscaped with flowers and year round plantings. This human-scaled people-gathering place will offer many public amenities, like park benches and bicycle paths, and will draw visitors to recreate, dine, shop, and enjoy the waterfront. The harborwalk will offer jogging and picnic areas for families and support a water taxi network to facilitate access to the Project Site from regional water taxi stations. The Project will create a new harborwalk for the people of Everett, the neighboring communities, and new visitors to the area in an area never before accessible to the public. The water taxi transportation system that exists in Boston Harbor would be expanded, as described above, to bring tourists, guests, and shoppers to the Project.

Interior spaces of the retail and dining areas will be infused with natural sunlight, high-quality materials, as well as luxurious plantings in a four-season atrium garden located in the main lobby entrance. This theme will be continued outdoors with lush landscaped walkways, seating areas, a gazebo, and a beckoning harborwalk along the picturesque edges of the Mystic River. Spectacular views of the Boston skyline will draw visitors to the hotel as well as the casino, retail, spa, and dining offerings. Detailed descriptions of the Project components follow below.

High-Rise Hotel and Lobbies

The architecture for the high-rise hotel offers a unique blend of classical and contemporary design. These elements are used in subtle ways and are nostalgic of the American golden age of grand hotels and crystal palaces of the turn of the

century. Expressed in areas like the elaborate metal porte cochere, the double cushion vault ceilings and skylights throughout, the architectural features grace the Project with subtle embellishments of elegance and help to infuse this new construction with a sense of traditional.

The design of the hotel high-rise reflects a glass and stone 25-story tower flanked by an arcade of low-lying buildings with glazed skylights surrounded by gardens and walking paths down to the river's edge. Guest rooms in the resort would range from 575 to 2,300 square feet, designed to take advantage of panoramic views of the Mystic River/Boston/Cambridge skyline and the vistas beyond Everett to the north.

Gaming Area

The gaming area is located beyond the atrium garden lobby from the main entrance. The space will house approximately 3,072 slot machines and 150 gaming tables, a total of 3,972 gaming positions. The gaming area will feature a high-limit area with 72 additional slot machines and a VIP area with 10 table games offering a higher level of service. There will be area poker room with 25 poker tables. There also will be eight Lottery machines in locations to be determined.

Non-Gaming Amenities

The Project offers five high-end restaurants and will feature at least one recognized celebrity-chef restaurant in addition to several food and beverage business opportunities for local tenants. The retail area will consist of a number of outlets for luxury brand apparel, jewelry, and additional offerings. There will also be convention and meeting space capable of accommodating corporate, small-group, and special events. A lounge in the center of the casino would serve as a focal point to the grand space and overlook the four season atrium garden. A nightclub will be located on the Casino Level providing another option for entertainment and nightlife for both guests of the casino and local visitors. There will also be a five-star luxury spa and fitness center.

Open Space and Landscape Amenities

The park-like setting and lush landscaping of the waterfront improvement will create a wonderful classic city green reminiscent of Boston city parks and other public green gathering areas in the vicinity. The Project will provide an unprecedented opportunity to transform the Lower Broadway Area and to realize many of the goals put forth in recent state, regional, and local planning initiatives to develop an economically prosperous neighborhood with a mix of uses and activities and a vibrant, attractive public realm.

A proposed ten- to fourteen-foot wide harborwalk will be located at the terminus of the Project Site peninsula, with views of the Boston skyline and the Mystic River.

Restoration of and improvements to the coastal bank and intertidal areas will include native shoreline plantings and salt marsh restoration. A "living shoreline" plan will restore clams and oysters to their historic settings. A more detailed description of the shoreline improvements is provided in Chapter 8, Wetlands and Waterways.

2.3.3 URBAN DESIGN

The overall urban design intent for the Project is to re-develop a now blighted brownfield site with a dramatic architectural statement surrounded by high-quality public spaces and amenities. The tower will act as a focal point on the skyline, creating a new identity for an area that is currently lacking in definition beyond its industrial land uses and urban working waterfront. The hotel tower is a statement that will be clearly identifiable as the "Wynn" brand. Concurrently, the public realm will respond to the existing environment in Everett, most notably by embracing and opening access to the Mystic River. Through the activity generated by the Everett MHP, public spaces, and activity will be oriented toward the river, allowing guests of the Project, as well as the general public, to enjoy the views and utilize public transportation and water transportation services that the Project will support. (See Appendix C, Everett Central Waterfront Municipal Harbor Plan). The retail spaces will mediate between the ground plane and the hotel tower by providing a pedestrian-friendly indoor environment infused with natural light and a sense of human scale relative to the public environment. The Project will use the highest quality materials, including building materials, surface pavings, plantings and landscape elements, signage, and other amenities.

Combined with the newly approved zoning and land-use changes described in the Lower Broadway Master Plan, the area surrounding the Project Site will be revitalized and energized with public, retail, and corporate activities.

2.3.4 NEIGHBORHOOD CONTEXT

Everett was originally part of the neighboring communities of Charlestown and Malden. In 1870, the town of Everett annexed, and in 1892, the town was incorporated as the City of Everett. Today, Everett is bordered by Malden to the north, Revere to the east, Chelsea to the southeast, Medford and Somerville to the west and Boston and the Mystic River to the south. Everett is a densely built and highly diverse city. According to the US Census Bureau, Everett has a total land area of 3.43 square miles, an estimated population of 42,000 and a population density of roughly 12,200 people per square mile.

Nearly 59 percent of Everett's population is of working age, between 19 and 65. Everett's median household income is $48,000, roughly 26 percent lower than the

Massachusetts median household income. The high school graduation rate is on par with the state average; however only 17 percent of the population has a bachelor's degree or higher, well below the state average of 39 percent.

During the latter part of the 19th century, Everett transitioned from a quiet town into an industrial powerhouse. By 1920, industry had become the largest taxpayer in the city. Everett's proximity to Boston, riverfront location and the availability of transportation options unlocked the potential of Everett's waterfront as a prime location for industrial enterprises. Large corporations, including the Monsanto Chemical Company, General Electric, and the Leavitt Corporation, have contributed to Everett's economic growth and industrial identity at different times over the past century.

Today, a portion of Everett's waterfront remains engaged in active industrial and maritime uses that are critical to the local and regional economy; however, many of the old industrial sites are now defunct and awaiting redevelopment. Everett is focused on protecting its industrial economy, while redeveloping underutilized waterfront properties with degraded environmental conditions that generally prohibit the public from accessing and enjoying the waterfront.

The surrounding neighborhood reflects the economic decline of chemical manufacturing and other industries that once populated this part of Everett's waterfront. Broadway contains a mix of businesses and a number of underutilized parcels that currently provide an overabundance of surface parking in the area. Adjacent to the Project Site, the Gateway Center, which was completed in the late 1990s, has successfully brought large retailers to the area and has become a regional retail destination. The Gateway Center construction also resulted in environmental cleanup of a portion of the former Monsanto Chemical Site and the addition of new passive parkland to the existing DCR parkland along the river. This parkland is well utilized and Gateway Center is partially responsible for its long-term maintenance.

Overall, the neighborhood context is vehicle-dominated and lacks sufficient connections for pedestrians and cyclists that would make the area attractive to these users. The Project provides an unprecedented opportunity to transform the Lower Broadway Area and to realize many of the goals put forth in recent state, regional, and local planning initiatives to develop an economically prosperous neighborhood with a mix of uses and activities and a vibrant, attractive public realm.

2.3.5 PARKING AND CIRCULATION

Access to the Project Site under the first configuration (the "Project Access") will be provided by way of a boulevard-type driveway that will intersect the west side of Lower Broadway (Route 99) just north of Horizon Way opposite Mystic Street and

will be placed under traffic signal control. Secondary Project Access will be provided by way of a driveway that will also intersect the west side of Lower Broadway north of the primary Project Site driveway. It is envisioned that the secondary driveway will also be placed under traffic signal control. See Figure 2-1 and 2-2, Existing Site Conditions. The second configuration for Project Access (the "Alternative Project Access") includes a single point of access off Horizon Way in Everett. See Figure 2-4, Alternative Site Configuration. All entry points for Project Access are proposed to be signalized.

The Project offers approximately 2,900 guest parking spaces located conveniently below the Casino Level via a four-level parking garage with valet parking and guest parking. There are multiple elevator access points to the Casino Level, enabling guests to enter the Project without entering the casino. Employee parking, which consists of 800 parking spaces, is off-site but located within a few miles from the Project. Employee shuttles will be provided to transport employees to and from the parking facilities. Bus parking will also be located off-site within a few miles of the Project.

An essential feature of the Wynn brand is the easy and pleasant access to the hotel, casino and retail/dining areas via automobile. Visitors and hotel guests who are not parking on-site will travel along the boulevard past the main garage to a covered, three-lane drop-off loop at the hotel/retail entrance porte cochere. Visitors will be able to enter the enclosed parking garage for valet or self-parking directly from the entrance boulevard. Those who will be dropped off will also find covered access to the main entrance of the resort. One benefit of developing a compact, urban site is the elimination of acres of surface parking that require long walks to the destination in inclement weather. See Chapter 4, Transportation, for additional details regarding parking and circulation.

2.3.6 TRANSPORTATION CONTEXT

The Project Site is situated within an urban network of highways, major streets, and public transportation hubs. Regional vehicular access to the Project will be via Route 16, Route 99, and a network of local roadways. Public transportation is provided by the MBTA with bus, trains, and commuter rail service in close proximity. The MBTA services the Broadway/Alford Street (Route 99) corridor via bus routes and also provides transit service via the Orange Line at the nearby Wellington, Malden, and Sullivan Square stations and future Assembly Station.

Water Transportation Opportunities

A new accessible multi-purpose dock landing near the Project entrance will be included as part of the waterfront revitalization plan. A frequently scheduled passenger ferry service from the Project Site in Everett to key Boston Inner Harbor

landing sites would provide a fast, enjoyable, and reliable water travel experience for visitors and employees alike. Preliminary findings support primary Inner Harbor landing locations at the Downtown Waterfront, and the South Boston Seaport District. Secondary central landings to be considered in the future include Logan Airport, North Station, and South Station. All proposed Inner Harbor landings currently exist or are scheduled for completion in time for the Project opening. A new, state-of-the-art Everett ferry would offer many advantages to Project visitors and Everett, as well as for the broader array of Boston visitors and residents. See Figure 2-26, Proposed Passenger Ferry Route to Boston. As described further in Chapter 4, Transportation, the Proponent will initiate a pilot program to test the viability and efficiency of the water transportation service once the Project is initiated.

Components of the passenger ferry service will include:

- Triangulated connections between the Project Site, Long Wharf, and the Seaport World Trade Center in South Boston, potentially a short 15 to 20 minute ferry transit alternative to land travel routes, could accommodate up to 1,200 people per hour.
- A gateway ferry experience of the historic Boston Harbor, Mystic River, and Everett waterfront.
- A new water transit option for the Project's visitors and workforce.
- Expanded transit connections for other Everett residents, workforce, and visitors.
- Reduction of auto traffic at the Project and in surrounding neighborhoods.
- A one seat ferry ride within close walking distance of landings at both ends of the trip.
- An environmentally-responsible transit mode compatible with the restoration of the Mystic River and Everett Waterfront.
- A new multi-purpose dock located within a short walk of the front door of the Project and the new harborwalk.
- State-of-the-art vessels capable of navigating swiftly and safely along the variety of bridge and shoreline conditions between Everett and Boston.

The specially designed ferries under consideration would be long, low catamarans, propelled by clean-emissions jet drives, fully accessible through bow loading, the

ferries would be able to navigate low-clearance bridges and provide comfortable year-round accommodations for passengers. Low-environmental-impact ferries have been designed to operate in similar conditions in London and Sydney and can easily be designed and built locally. The ferries could seat approximately 49 passengers and operate from early morning to late evening, seven days a week.

2.3.7 OPEN SPACE

As discussed in Section 2.3.3, the Project Site is compact, and the Project is highly organized around a functional urban-design concept that utilizes already disturbed and impacted soils and minimizes impacts to undeveloped land. Open space provided on the Project Site will be lushly landscaped and directly connected to the Mystic River waterfront. Open space and planting areas, as well as seating and shade from the sun, will be provided along the Mystic River on the proposed harborwalk.

A restored shoreline along the peninsula will host native plantings as well as a new thriving salt marsh community. The Project also proposes to initiate shellfish restoration and oyster seeding programs to improve underwater habitat and water quality below the shoreline. See Chapter 8, Wetlands and Waterways, for more information.

2.3.8 WATERFRONT ACCESS

Presently there is no public access to the waterfront on the Project Site and very little public access to the waterfront in Everett. Conditions on the Project Site and along the shoreline strongly discourage walking or stopping along the waterfront due to the presence of environmental hazards and the perception of unattractive, unsafe surroundings. Presently, the Project Site is closed to the public and not easily accessible from the adjacent Gateway Park.

The Project will greatly enhance waterfront access to and along the Everett waterfront. As a city with significant waterfront area but virtually no public access to the river, Everett has placed a high priority on expanding opportunities for connections to its waterfront. The Project Site is a key parcel in the formation of a continuous waterfront access route along the Mystic River.

The Project design will accommodate a robust pedestrian network along the entire length of the waterfront. Pedestrian amenities will include, at a minimum, a ten to fourteen foot wide continuous harborwalk, extending the length of the Project's waterfront property boundary. The harborwalk will be fully handicapped accessible. This harborwalk will be enhanced by high-quality pedestrian amenities along its length, including public seating, appropriate signage, pedestrian level lighting, safety railings where required, lush plantings, salt marsh and other native

vegetation. Public restrooms will be available in nearby retail, restaurant, and hotel facilities. The harborwalk will be situated in elegantly landscaped open space along the water, with buildings set back approximately 100 feet from the water's edge, creating a pedestrian waterfront zone along the shoreline. This waterfront zone will be sheltered from the prevailing west and northwest winds during the colder months but open to the cooling sea breezes during the warmer months.

The Project will also be planned to include waterfront access by boat and will include the first public boat landing in Everett. The public boat landing will provide opportunities for boaters, along with the planned ferry shuttle service, to access the Project Site directly from floating docks along the shoreline. A handicapped accessible ramping system, shared with the water transportation dock, will be compliant with the Americans with Disabilities Act (ADA). Boaters will enjoy access to dining at the multiple restaurants, shopping in the retail complex, spa, and casino amenities, and an array of waterfront amenities.

While adjacent properties do not currently provide public access walkways, opportunities exist for future improvements that would link the Project Site with these sites and provide a continuous waterfront experience. To the east, the Boston Water and Sewer Commission (BWSC) and the Massachusetts Water Resources Authority (MWRA) own waterfront sites that could potentially provide public access along the shoreline and could link to the Route 99 /Alford Street Bridge crossing the Mystic River in the future. To the west, an existing underpass to the MBTA right-of-way and elevated rail line can be planned to accommodate pedestrian connections through to the Department of Conservation and Recreation parkland, the Amelia Earhart Dam, and other landholdings along the Mystic River as part of current coordinated planning efforts. (Appendix C, Everett Central Waterfront Municipal Harbor Plan, describes the extensive opportunities for expanding public access to the Project Site and surrounding locations.)

2.3.9 WATERFRONT CONDITIONS AND PROPOSED WORK

Existing Conditions

The Project Site is bordered by the Mystic River to the south and a water embayment to the east. The embayment is approximately 350 to 500 feet wide from shoreline to shoreline (from the Project Site to the upland east of the embayment containing the operations of the MWRA and BWSC). The embayment contains a former navigation channel which was reportedly constructed in the mid-1800s. Records indicate the channel to be about 1,000 feet long with a width of 100 feet, and an original draft of 20 feet below mean low water. The channel flares out at the northern end to about 250 feet wide. The channel has since been shoaled, and the present depth does not exceed about 13 feet below the mean low water mark. The

Project Site is bordered to the west by an MBTA parcel that terminates in a stone abutment at the southern end.

The water areas adjacent to the channel are shallower than the central portion of the channel. The eastern side of the embayment is a mud flat with surface grades from about the mean low water mark to about 3 feet above it. The mud flat contains a variety of debris, including several abandoned timber barges.

The southern portion of the Project Site terminates in a steep vegetated slope. Seaward of this slope there is a mudflat that extends about 150 to 200 feet out from the shoreline. The mudflat in this location contains miscellaneous small stones and debris.

The northern sloped shoreline within the embayment is comprised of small stones. Within the northern portion of the embayment are some abandoned timber and granite stone walls that abutted the channel and were used for historic loading/unloading operations. Several abandoned timber docking structures located adjacent to the north-central portion of the channel were previously used during the period when Deer Island Outfall tunnel muck was being disposed of on the Project Site.

Waterfront Improvements

The proposed waterfront improvements include the stabilization of the shoreline and the construction of water transportation facilities and floats for the docking of recreational/transient vessels. See Figure 2-27, Proposed Waterside Work Plan, and Figure 2-28, Proposed Waterside Work Sections.

The proposed shoreline work includes the installation of a vertical steel pile bulkhead over a combined length of approximately 1,230 linear feet, the placement of stone revetments and the installation of pile supported walkways over approximately 335 linear feet, and the removal of abandoned and deteriorated structures and remnants. The waterside work includes the dredging of approximately 12,700 cubic yards (cy) of sediment over approximately 45,800 square feet to provide an adequate water depth of 6 feet below mean low water to accommodate vessels. Construction tolerances for dredging normally assume a one foot over dredge, which was included in the dredging volumes. The majority of the dredging will be located within the limits of the prior channel and is planned to be wholly within Everett. Dredging activities will be sufficiently offset from the shoreline of the MWRA and Boston Water and Sewer parcels not to impact the existing slopes or watersheet in the City of Boston. Dredging would have the additional benefit of removing sediment with high levels of metals contamination.

The proposed float system will be designed to accommodate water transportation vessels and provide docking for approximately 15 recreational/transient boats. The proposed docks and floats could accommodate ferry, water taxi, and day-trip vessels. Floats will include a steel float that will support gangways and platforms to allow for full accessibility throughout the tidal cycle. The float system will be connected to the handicapped access float so that the entire system will be accessible. The proposed Project also includes an additional main float for recreational and transient vessel docking along the western shoreline of the embayment. The northern side of the embayment may also be designed with main floats to support various recreational/transient boats.

2.4 CONSISTENCY WITH PLANNING

The Project will be designed and constructed in harmony with local and regional long-range planning efforts that have focused on the neglected portion of the Mystic River waterfront that contains the Project Site.

The Proponent has reviewed a number of planning studies and initiatives that include the land containing the Project Site. While differing in their geographical scope and authorship, these plans have consistently identified the Project Site as a location with tremendous potential for transformation. This section summarizes each of the planning studies the Proponent has reviewed in the context of the Project and for its consistency with the Project with regard to waterfront access, environmental cleanup, open space opportunities, improved transportation networks, expanded bicycle and pedestrian pathways, economic revitalization and job creation. See Figure 2-29, Regional Planning Context.

2.4.1 EVERETT WATERFRONT ASSESSMENT

In 2003, the City of Everett Mayor's Office of Planning and Development commissioned Fort Point Associates, Inc. to prepare an Everett Waterfront Assessment (the "Waterfront Assessment"). The Waterfront Assessment identified a range of opportunities for enhancement of public access to and enjoyment of the Mystic and Malden Rivers. Specifically, it identified a demand for boat access to the river and a desire on behalf of residents for more berthing facilities along the Everett waterfront, such as private marinas, public boat ramps, and a public mooring field. On the landside, the Waterfront Assessment identified opportunities for walking and bicycle pathways, as well as passive and active open space. The Project Site was identified as part of the study.

2.4.2 MYSTIC RIVER MASTER PLAN

In 2009, the Massachusetts Department of Conservation and Recreation (DCR) completed the Mystic River Master Plan (the "MRMP"), which aimed to address a

range of environmental, open space, and land use issues in and around the Mystic River in the municipalities of Arlington, Boston, Everett, Medford, and Somerville. The MRMP addressed area needs and opportunities comprehensively by proposing the restoration of the river banks and edges for ecological health and recreational purposes; the strengthening of the open space network through the development of a continuous pathway along both banks of the river; the identification of areas suitable for recreation, education, and preservation; opportunities for water-related activities like fishing and boating; and the development of guidelines and techniques for the management and operation of parkland.

The Proponent will support these goals through a number of on- and off-site improvements, including the proposed connection of existing open space with the open space proposed for development on the Project Site; the activation of a pedestrian waterfront zone along the Project Site shoreline; and enhancement of waterfront access, including the first public boat landing in Everett. See Section 2.2.4, Open Space, and Section 2.2.6, Waterfront Access.

2.4.3 LOWER BROADWAY DISTRICT MASTER PLAN

In April 2012, Everett, with its consultants, Sasaki Associates, embarked on a nine-month process to complete a LBD Plan. The vision expressed in the LBD Plan is to "transform the Lower Broadway District into a vibrant mixed use urban neighborhood with an improved public realm and enhanced local and regional identity as a high quality residential, employment, commercial district with pedestrian-friendly streets, civic spaces, and recreational amenities, including public access to the Mystic River." The Project Site is identified for mixed use development and for its potential to accommodate significant new development that would also allow for meaningful public space, a public path/harborwalk, and access to the river. The Master Plan is expected to be formally approved in 2013. Everett is moving forward with its implementation, having taken measures such as revising the zoning ordinance to allow for the uses and activities recommended in the Master Plan.

The Project is consistent with the policy and planning objectives set forth in the Master Plan. Specifically, it will achieve a mix of uses, including hotel and restaurants, to reshape the former industrial area and take advantage of this unique and currently under-utilized waterfront location. For a review of the Project in the context of the current LBD Plan, see Chapter Three, Project Alternatives.

The Project will support economic development, growing Everett's tax base, and increasing the quality and variety of employment opportunities available to residents of Everett. The Project will provide usable open space and public access to a previously inaccessible and blighted waterfront and will improve bicycle and

pedestrian access and connectivity to the existing waterfront park adjacent to the Gateway Center Mall.

2.4.4 PATHS TO A SUSTAINABLE REGION

The Boston Metropolitan Planning Organization's Long-Range Transportation Plan, Paths to a Sustainable Region (the "MPO Plan"), expresses a regional vision to be achieved by 2030. Goals of the MPO Plan include economic vitality, brownfield redevelopment, strengthening connections, expanding transit, pedestrian, and bicycle networks, Transportation Demand Management, and improving heavily-used networks before such expansion.

The Proponent has committed to a number of transportation improvements and community enhancements that will support the MPO Plan's goals. To improve the viability of alternative modes of transportation, the Proponent has committed to providing a shuttle service from the Project Site to nearby MBTA subway stations and other transportation hubs; providing additional MBTA bus stops; and expanding pedestrian and bicycle access on both existing roadways and new pathways, including a link from the Project Site to existing and planned bicycle/pedestrian trails through Gateway Park that will connect to a future link across the replacement Woods Memorial Bridge to Wellington Station.

In support of making existing and heavily used networks more efficient, the Proponent has committed to a substantial redesign of major arterials including Route 99 (Broadway), which is identified in the MPO Plan as a corridor bottleneck.

2.4.5 MAPC PLANNING STUDIES

The Project is consistent with the findings and recommendations of several planning studies undertaken by the Metropolitan Area Planning Council (MAPC). The agency's 30-year plan for the region, MetroFuture, recognizes Everett as one of its "Inner Core" communities, a target for reinvestment and economic development. Through a One Billion Dollar minimum investment in the Project, including impact payments, workforce development, and upgrades to utility and transportation infrastructure both on and off the Project Site, the Project will play a key role in realizing MAPC's vision for Everett.

MAPC has also sponsored a number of other studies specifically targeting Everett, the Mystic River waterfront, and the region, including:

- The Lower Mystic River Corridor Strategy (June 2009). Authored by MAPC, the Boston Redevelopment Authority, and the cities of Chelsea, Everett, Malden, Medford, and Somerville.

- City of Everett Open Space and Recreation Plan, 2010 - 2017. Authored by MAPC and the City of Everett.
- Walking Routes to the Mystic River. Authored by MAPC and the cities of Boston, Chelsea, Everett, Malden, Medford, and Somerville.

These studies identify a need for and potential to revitalize the portion of Everett and the Mystic River that includes the Project Site. Recommended strategies for doing so include: linking regionally significant open space parcels through acquisitions and enhancements, encouraging sustainable development projects, and improving access to and along the river through the development of water transportation, public transit, roadway improvements, and bicycle and pedestrian accommodations.

The Project will support these goals through the creation of an open space network that connects to open space on adjacent sites, public transportation networks, connections to public transportation nodes, and expansion of bicycle and pedestrian accommodations.

2.4.6 EVERETT CENTRAL WATERFRONT MUNICIPAL HARBOR PLAN

Everett has developed the Everett MHP for Everett's Central Waterfront, which includes the Project Site. The Everett MHP has been filed by Everett with the EOEEA and is pending approval. A copy is provided as Appendix C, Everett Central Waterfront Municipal Harbor Plan.

Purpose

The primary purpose of the Everett MHP is to pursue longstanding goals of Everett, residents, businesses, and other stakeholders to encourage new mixed-use development and associated waterfront access and amenities along the Mystic River. Specifically, the Everett MHP offers unprecedented opportunity not only to plan for new open space on the Project Site but to set high standards for its activation. Equally important, the Everett MHP creates opportunities for connecting existing parkland with new open space, furthering a long-term goal of the community to improve the pedestrian and bicycle network along the Mystic River. In addition, the Everett MHP incorporates measures that would further serve to activate the waterfront and the Mystic River through docking facilities and other access to the watersheet.

In accordance with 310 CMR 23.00, the Everett MHP tailors Chapter 91 dimensional and use requirements to the unique circumstances of the waterfront to fulfill the objectives of the Commonwealth's Waterways Regulations to protect and promote the public's use of filled and flowed tidelands. The Everett MHP builds on

other recent planning initiatives to transform an underutilized section of the Everett waterfront into a more vibrant, active destination for the public. Proposed substitutions and offsets to baseline Chapter 91 use and dimensional guidelines are consistent with the goals and recommendations of these recent planning initiatives, including the Department of Conservation and Recreation's Master Plan (2009) and Everett's recently completed LBD Master Plan (2013).

Everett MHP Area

The Everett MHP area (the "MHP Area") includes approximately 155 acres of land, in addition to watersheet within Everett city limits, roughly bounded by the Malden and Mystic Rivers to the west, Route 16 to the north, the MBTA Commuter Rail tracks to the east, and the city boundary to the south. The MHP Area is limited to property within Everett limits. Approximately 75 acres of the MHP Area are filled tidelands subject to jurisdiction under Chapter 91 of the Massachusetts General Laws. See Figure 2-30, Municipal Harbor Plan Area.

Public Process

The public participation program for the Everett MHP included consultation with an Advisory Committee, which is comprised of a broad range of stakeholders representing city and state agencies, nonprofit organizations, local residents and business owners, and others who met regularly from May to September 2013. Representatives from the cities of Boston, Somerville, and Medford were invited to participate in this process. All meetings of the Advisory Committee and public meetings were open to the public. Everett worked to engage a broad constituency through email, posting on the Envision Everett website, and publication in local newspapers, including the Everett Independent. Everett has kept Coastal Zone Management (CZM) and the Department of Environmental Protection (MassDEP) Waterways Program staff informed about the development of the Everett MHP.

Potential Substitutions and Offsets

The Everett MHP includes an analysis of substitutions and offsets for three development alternatives, including a Chapter 91 compliant build-out, the Project build-out, and a build-out based on the LBD Master Plan.

Substitutions were requested in the Everett MHP for the following standards:

- Setbacks for Facilities of Private Tenancy (310 CMR 9.51(3)(b))
- Water Dependent Use Zone ("WDUZ") (310 CMR 9.51(3)(c))
- Lot Coverage (310 CMR 9.51(3)(d) and 310 CMR 9.53(2)(d))
- Height (310 CMR 9.51(3)(e))

Qualitative and quantitative offsets associated with any adverse impacts of these substitutions are proposed in the Everett MHP that would greatly enhance waterfront amenities.

Schedule

Following an extensive community process, the Everett MHP was submitted to EOEEA on October 15, 2013, which triggered a 30 day public comment and consultation period with EOEEA Office of Coastal Zone Management (CZM). A public hearing was conducted at Everett City Hall on November 4, 2013. It is anticipated that EOEEA will issue its decision by late 2013 or early 2014.

2.5 CONSISTENCY WITH ZONING

The Project is currently located in the Riverfront Overlay District, which is governed by Section 26 of the City of Everett Zoning Ordinance (the "Ordinance"). The Riverfront Overlay District was promulgated by Everett to promote active redevelopment of this former industrial area with mixed commercial uses, including hotels, retail, and restaurants. Everett is currently rezoning the Lower Broadway District, consistent with the LBD Plan, in a manner that will permit the Project to proceed as a matter of right, subject to Site Plan Review.

As described in Section 4 of the Proposed Lower Broadway Zoning Amendments (the "Lower Broadway Zoning"), under the newly enacted zoning, the Project Site is subject to the use, design and dimensional standards of the Casino Overlay District. The Casino Overlay District is designed to accommodate a luxury hotel and destination resort casino licensed by the Gaming Commission, pursuant to the Gaming Act. The Overlay District's height and coverage requirements will allow a maximum build-out of 400 feet by right on the Project Site. As currently designed, the Project's tower is 386 feet in height and would fit within the zoning envelope established by the Lower Broadway Zoning.

Everett has adopted the Lower Broadway Zoning and Design Guidelines. The Proponent will submit relevant plans to the Everett Planning Board that demonstrate that the Project meets the required Performance Standards for Site Plan Approval within the Casino Overlay District as described in Sections 4.E and 10.E of the Lower Broadway Zoning.

2.6 PUBLIC BENEFITS

The Proponent is committed to working with the local community, which includes significant representation of minority groups and low-income households, and will support the community's vision for the area, providing jobs to local residents and improving community access to open space and the waterfront. In addition to the many benefits conferred upon Everett pursuant to the Host Community Agreement, the Project will provide the following public benefits:

- Create a landmark gateway to Everett from Boston with high quality mixed-use development on vacant waterfront parcel
- Environmental benefits, including:
    - Environmental cleanup and reuse of the former Monsanto Chemical Plant site
    - Waterside cleanup and improvements
- Stormwater management and improvementsEncourage the employment district to expand over time
- Improvements to Route 16 and Upper Broadway including:
    - Signal timing and system upgrades
    - Improved pedestrian and bicycle accommodations
    - Funding for substantial roadway and capacity improvements on Broadway and Route 16
    - Other off-site improvements to be identified during the project planning and approval process.
- Streetscape improvements on Broadway and throughout the Project Site
- Unify Broadway streetscape by infilling and framing it with complementary uses
- Maximize public waterfront access along Mystic River
- Prioritize local residents for filling jobs in the construction phase and permanent operations positions.

2.7 HOST COMMUNITY AGREEMENT

The Host Community Agreement was executed on April 19, 2013 by and between Everett and the Proponent, and is attached in Appendix D, Community Agreements. If the Gaming Commission grants a Gaming License to the Proponent, the Proponent will invest not less than One Billion Dollars in the Project. In addition, Everett will realize the following benefits:

Community Enhancement Fee

The Proponent will, during the construction phase of the Project, provide Everett with payments totaling Thirty Million Dollars ($30,000,000) to be used for capital improvements projects identified by Everett.

New Real and Personal Property Tax Revenue

The Proponent will, after opening, provide Everett with a PILOT payment in lieu of real and personal property taxes of Twenty Million Dollars ($20,000,000) per year, increasing by two and one-half percent (2.5%) annually.

Community Impact Fee

The Proponent will, after opening, provide Everett with an annual community impact fee payment of Five Million Dollars ($5,000,000) per year, increasing by two and one-half percent (2.5%) annually.

Everett Citizens Foundation

The Proponent will, after commencing construction, fund an Everett Citizens Foundation with an annual payment of Two Hundred Fifty Thousand Dollars ($250,000) per year, increasing by two and one-half percent (2.5%) annually. The Everett Citizens Foundation will provide additional community benefits (e.g., supporting and promoting local groups, associations and programs with important initiatives) relevant to Project impacts and to generally benefit Everett and its residents.

Single-Phase Construction

The Proponent will construct the Project and open it in a single phase, ensuring Everett and the state that the Proponent will realize the benefits of the complete development Project that has been promised and eliminating the risk that future phases are delayed or never delivered.

Tax Revenues

The Project will generate significant new tax revenue at the state and local levels in the form of sales, hotel, food and beverage, motor vehicle and gaming taxes.

New Jobs

The Project will generate approximately 4,000 construction jobs and approximately 4,000 permanent direct jobs at the Project, the latter of which will encompass job categories such as hotel/resort personnel, facility employees, food and beverage, gaming, and management and operational areas and will include full job training, benefits and opportunities for career advancement.

Support for Local Businesses

The Proponent has committed to make a good faith effort to use local contractors and suppliers for both construction and future operations, including actively soliciting bids from Everett based vendors. The Proponent will also purchase and issue at least $50,000 per year in vouchers and gift certificates for Everett businesses outside the Project Site. The Proponent also intends to partner with Everett and Boston-area hotels, restaurants, entertainment venues and tourism organizations to attract visitors and boost the local and state economy.

Roadway Improvements

The Project will provide millions of dollars for significant transportation improvements to the surrounding roadway network that would improve existing conditions and accommodate the additional Project-generated trips. These improvements are further detailed in Chapter 4, Transportation.

Environmental Remediation

The historic use of the Project Site as a chemical manufacturing plant has resulted in significant environmental contamination and an impediment to development, leaving this large waterfront parcel critical to Everett's development plans blighted and vacant. The Proponent will diligently pursue a multi-million dollar remediation of the existing environmental contamination in accordance with the Massachusetts Contingency Plan.

Open Space and Waterfront Access

The Project will include a significant open space component along the water's edge. This will promote and protect the Project's waterfront for public access, use, and enjoyment, opening the previously inaccessible Lower Broadway waterfront area and creating a valuable community resource. Improvements will create useable open space from a contaminated, blighted, and vacant parcel and extend the existing waterfront trail, creating pedestrian and bicycle access connecting the Gateway Center to Lower Broadway.

Sustainable Design/Green Building

The Proponent will set a new standard of excellence in sustainable design for gaming development projects. Striving for LEED Gold, the Project will be sustainably designed, energy efficient, environmentally conscious, and healthy for its employees and visitors. Innovative technologies are currently being explored to determine what works best with the Project as well as what might set a visible example for those visiting the Project Site.

City of Everett Infrastructure Improvements

The Proponent will provide Everett with a concept plan for streetscape, lighting, planting, and other infrastructure improvements.

Water Quality Improvements

The Proponent has committed to providing improved stormwater management on the Project Site, which will lead to enhanced water quality in Everett.

Support for Local Arts

The Proponent will provide features and programs in the Project for the benefit of the arts and local artists. These may include periodically hosting or providing space for community shows, exhibits, concerts, and other local cultural and arts programs.

2.8 COMMUNITY OUTREACH

The Proponent has undertaken extensive outreach and discussions with the cities of Everett, Somerville, Medford, Boston and Chelsea, and is developing individualized outreach programs for the surrounding communities. In addition, the planning departments in the Cities of Somerville, Medford, and Boston were invited to participate in the Everett MHP planning process with Everett. Table 2-1, Community Outreach contains a summary of the community-based meetings that have been held for both the Project and the Everett MHP.

2.9 SURROUNDING COMMUNITY AGREEMENTS

The Proponent is developing individualized outreach and mitigation programs for the surrounding communities. The Proponent has participated in meetings with officials from the communities of Malden, Medford, Somerville, Chelsea, and Boston to determine whether such communities will be subject to adverse impact as a result of this Project. The agreement with the City of Malden was signed on November 12, 2013, and is attached in Appendix D, Community Agreements. Discussions with the remaining communities are progressing at the time of this writing.

2.10 PROJECT SCHEDULE

Current Project planning activities indicate that the MEPA process will conclude in March 2014. The Proponent expects to file its response to the RFA-2 with the Gaming Commission on or before December 31, 2013, with the review and decision process that is anticipated to conclude in approximately the second quarter of 2014. Other permitting activities, including completion of the rezoning by Everett and the conclusion of the Everett MHP process have been completed or are expected to be finalized by the end of 2013 or the first quarter of 2014. If successful in obtaining the Gaming License from the Gaming Commission in the second quarter of 2014, the Proponent expects to complete permitting and initiate environmental cleanup, transportation mitigation, and construction activities immediately thereafter. The Project is proposed to be in operation in 2017.

Table 2-1, Community Outreach

Date	Meeting
March 14, 2013	Project Briefing for Michael McGlynn, Mayor of Medford
April 22, 2013	Project Briefing for Mystic River Watershed Association
May 6, 2013	MHP Advisory Committee Meeting #1
May 13, 2013	Project Briefing at the Massachusetts Partnership on Responsible Gambling with Jay Ashe, City Manager for the City of Chelsea
May 20, 2013	MHP Public Meeting #1
May 21, 2013	Community Meeting on Transportation
May 23, 2013	MHP Advisory Committee Meeting #2
May 29, 2013	Presentation to The Boston Harbor Association Harbor Use Committee
June 20, 2013	MHP Advisory Committee Meeting #3
June 24, 2013	MHP Advisory Committee Meeting #3
June 25, 2013	Project Briefing for Joseph Curtatone, Mayor of the City of Somerville
June 26, 2013	MEPA Site Visit, Scoping Session, and Project Overview
July 8, 2013	Open Public Meeting and Project Overview for the City of Medford
July 8, 2013	General Project Overview and Tour of Assembly Row Waterfront for the City of Somerville
July 9, 2013	Presentation to The Boston Harbor Association Harbor Use Committee
July 15, 2013	MHP Advisory Committee Meeting #4
July 15, 2013	Project Briefing for Michael Glavin, Director of Strategic Planning and Community Development for the City of Somerville
July 15, 2013	Meeting with Alexis Tkachuk, Chief of Staff for Representative Eugene O'Flaherty
July 17, 2013	MHP Public Meeting #2
July 23, 2013	Project Briefing for Somerville Chamber of Commerce
July 31, 2013	Project Briefing and review of traffic impacts for the City of Somerville
August 6, 2013	MHP Advisory Committee Meeting #5
August 7, 2013	Project Briefing for the Charlestown Waterfront Coalition
August 21, 2013	Presentation to Medford Business Owners
August 23, 2013	Presentation to the Medford Chamber of Commerce
September 4, 2013	Review of traffic analysis with Director of Community Development for the City of Medford
September 10, 2013	MHP Advisory Committee Meeting #6
September 11, 2013	MHP Public Meeting #3
September 18, 2013	Public presentation to the Medford Council on Aging
September 21, 2013	Project briefing to Somerville Realtors organized by Somerville Chamber of Commerce
September 23, 2013	Public Presentation to citizens of East Boston, Chelsea, Everett, Medford, and Malden
September 25, 2013	Presentation to the Mystic River Watershed Steering Committee
September 27, 2013	Presentation to the Massachusetts Oyster Project
October 9, 2013	Project Briefing for Chelsea Chamber of Commerce Board of Directors
October 10, 2013	MHP Public Meeting #4
October 15, 2013	Project Briefing for Jay Ash, City Manager for the City of Chelsea
October 23, 2013	Project Briefing for Michael Glavin, Director of Strategic Planning and Community Development; Omar Boukili, Mayor's Aide, Somerville
November 4, 2013	MHP Public Hearing
November 7, 2013	Presentation to The Boston Harbor Association Harbor Use Committee
November 13, 2013	Meeting on Surrounding Community Agreement with Michael McGlynn, Mayor of Medford
November 25, 2013	Briefing for Chelsea City Manager Jay Ash and staff
November 26, 2013	Briefing with City of Malden department heads
December 2, 2013	DEIR Briefing with Michael Glavin, Director of Strategic Planning and Community Development for the City of Somerville and staff
December 4, 2013	Presentation to Medford Business Leaders and Councilor Caraviello

Figure 2-1
Existing Site Conditions (1 of 2)
Source: *Feldman Professional Land Surveyors, 2013*

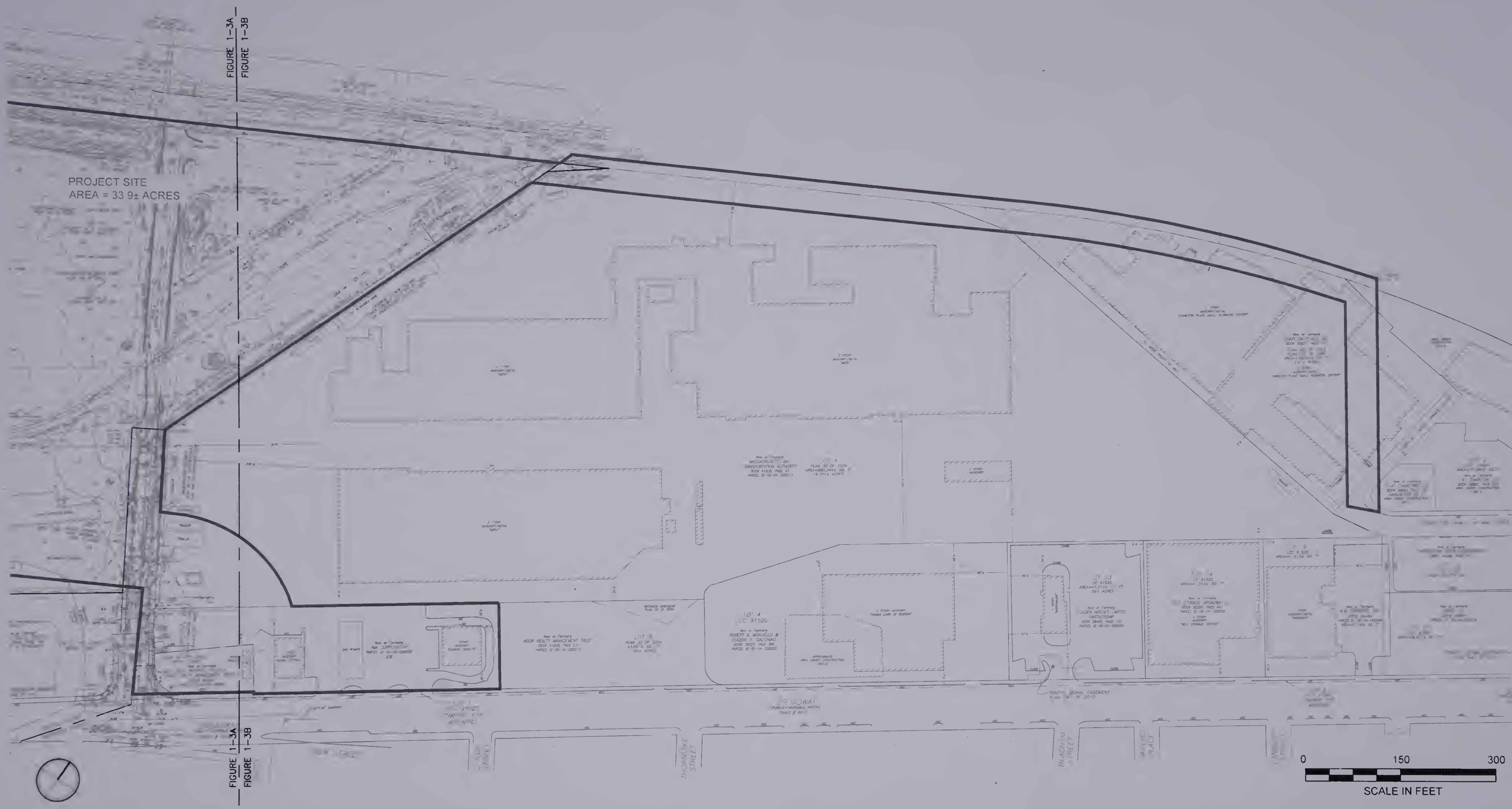
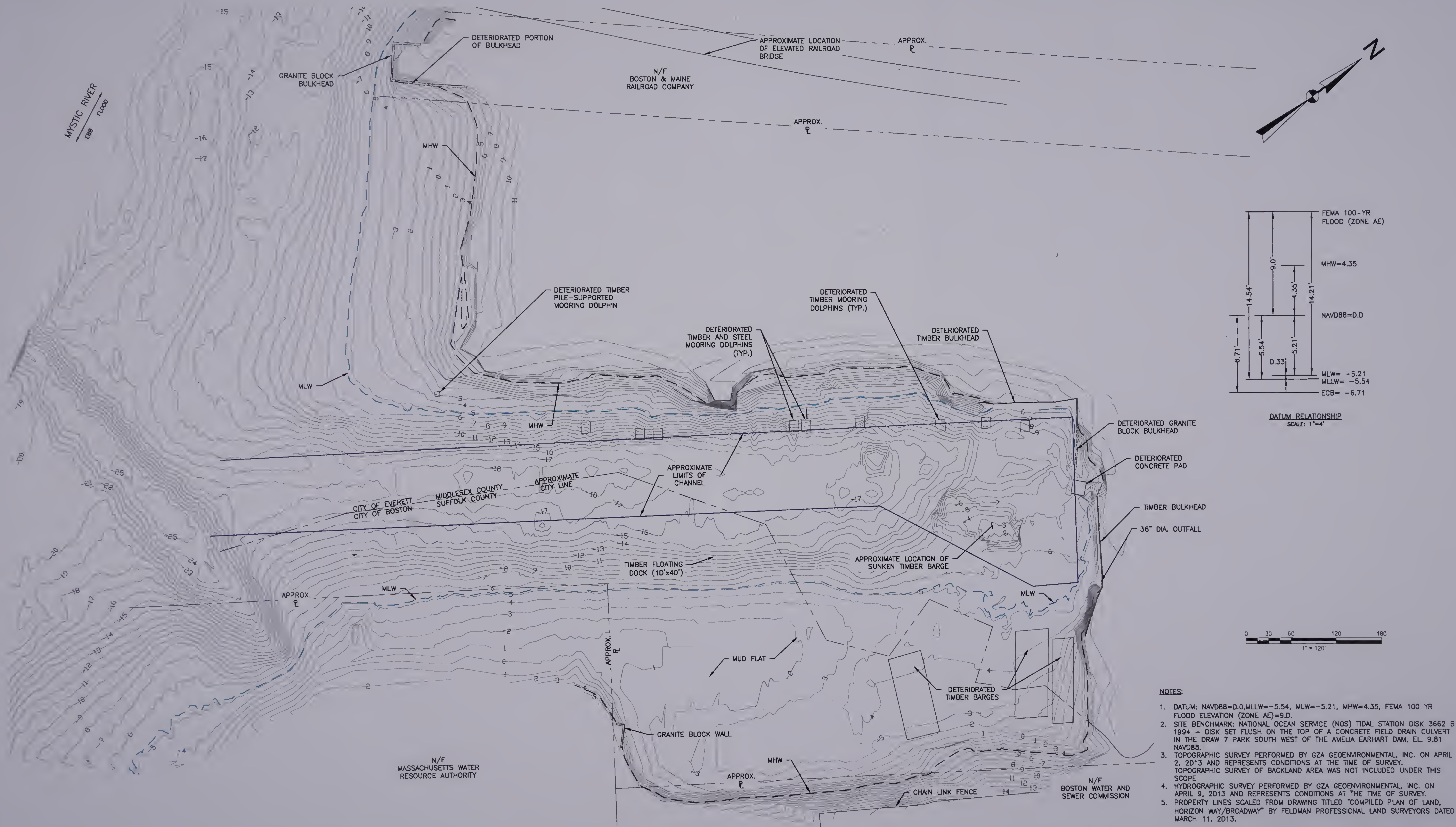


Figure 2-2
Existing Site Conditions (2 of 2)
Source: *Feldman Professional Land Surveyors, 2013*



NOTES:

1. DATUM: NAVD88=0.0, MLLW=-5.54, MLW=-5.21, MHW=4.35, FEMA 100 YR FLOOD ELEVATION (ZONE AE)=9.0.
2. SITE BENCHMARK: NATIONAL OCEAN SERVICE (NOS) TIDAL STATION DISK 3662 B 1994 – DISK SET FLUSH ON THE TOP OF A CONCRETE FIELD DRAIN CULVERT IN THE DRAW 7 PARK SOUTH WEST OF THE AMELIA EARHART DAM, EL. 9.81 NAVD88.
3. TOPOGRAPHIC SURVEY PERFORMED BY GZA GEOENVIRONMENTAL, INC. ON APRIL 2, 2013 AND REPRESENTS CONDITIONS AT THE TIME OF SURVEY. TOPOGRAPHIC SURVEY OF BACKLAND AREA WAS NOT INCLUDED UNDER THIS SCOPE.
4. HYDROGRAPHIC SURVEY PERFORMED BY GZA GEOENVIRONMENTAL, INC. ON APRIL 9, 2013 AND REPRESENTS CONDITIONS AT THE TIME OF SURVEY.
5. PROPERTY LINES SCALED FROM DRAWING TITLED "COMPILED PLAN OF LAND, HORIZON WAY/BROADWAY" BY FELDMAN PROFESSIONAL LAND SURVEYORS DATED MARCH 11, 2013.

Figure 2-3
Hydrographic Survey Plan
Source: *GZA GeoEnvironmental, Inc., 2013*

Figure 2-4
Conceptual Site Plan
Source: Wynn Design & Development, 2013

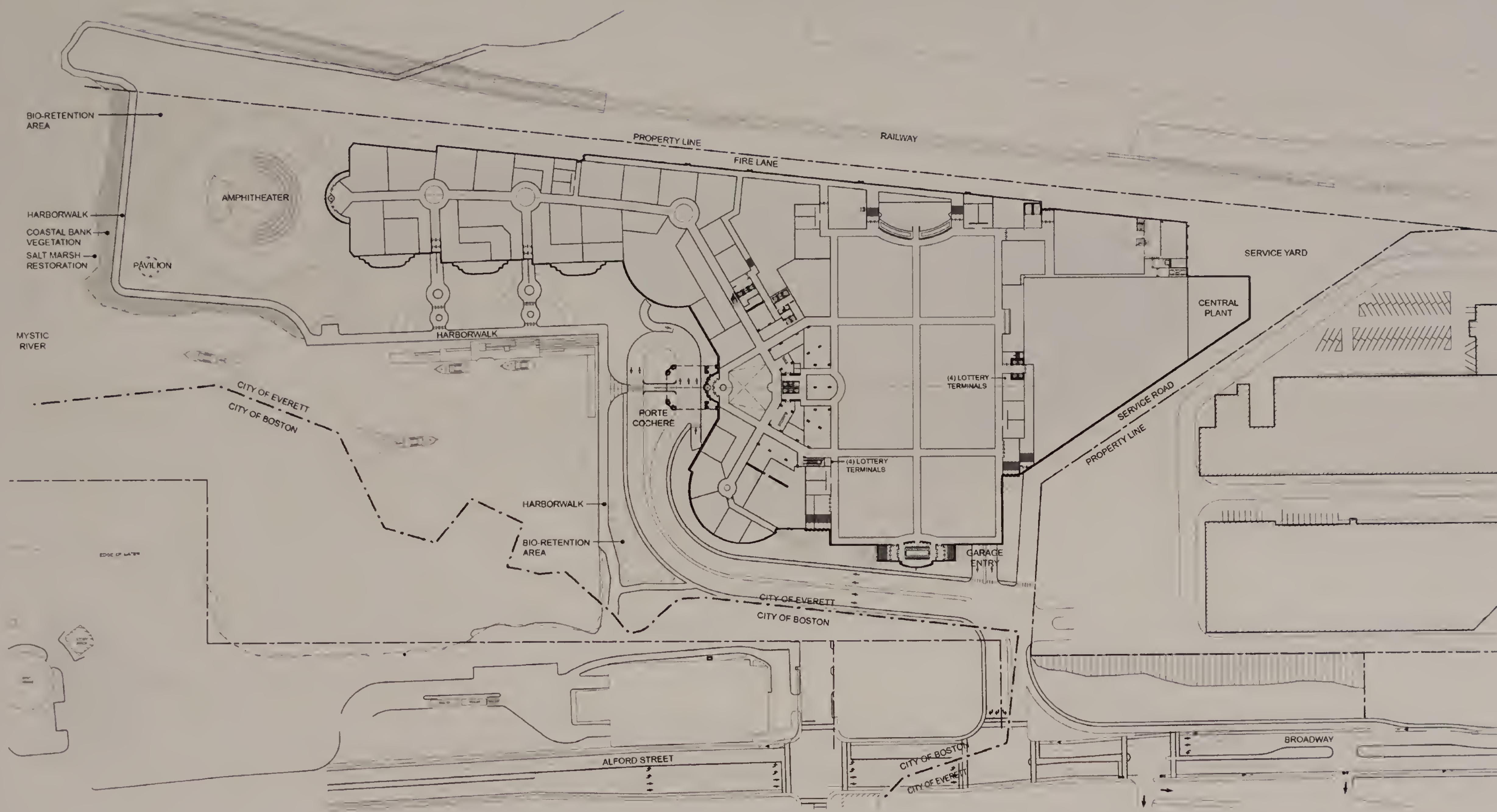
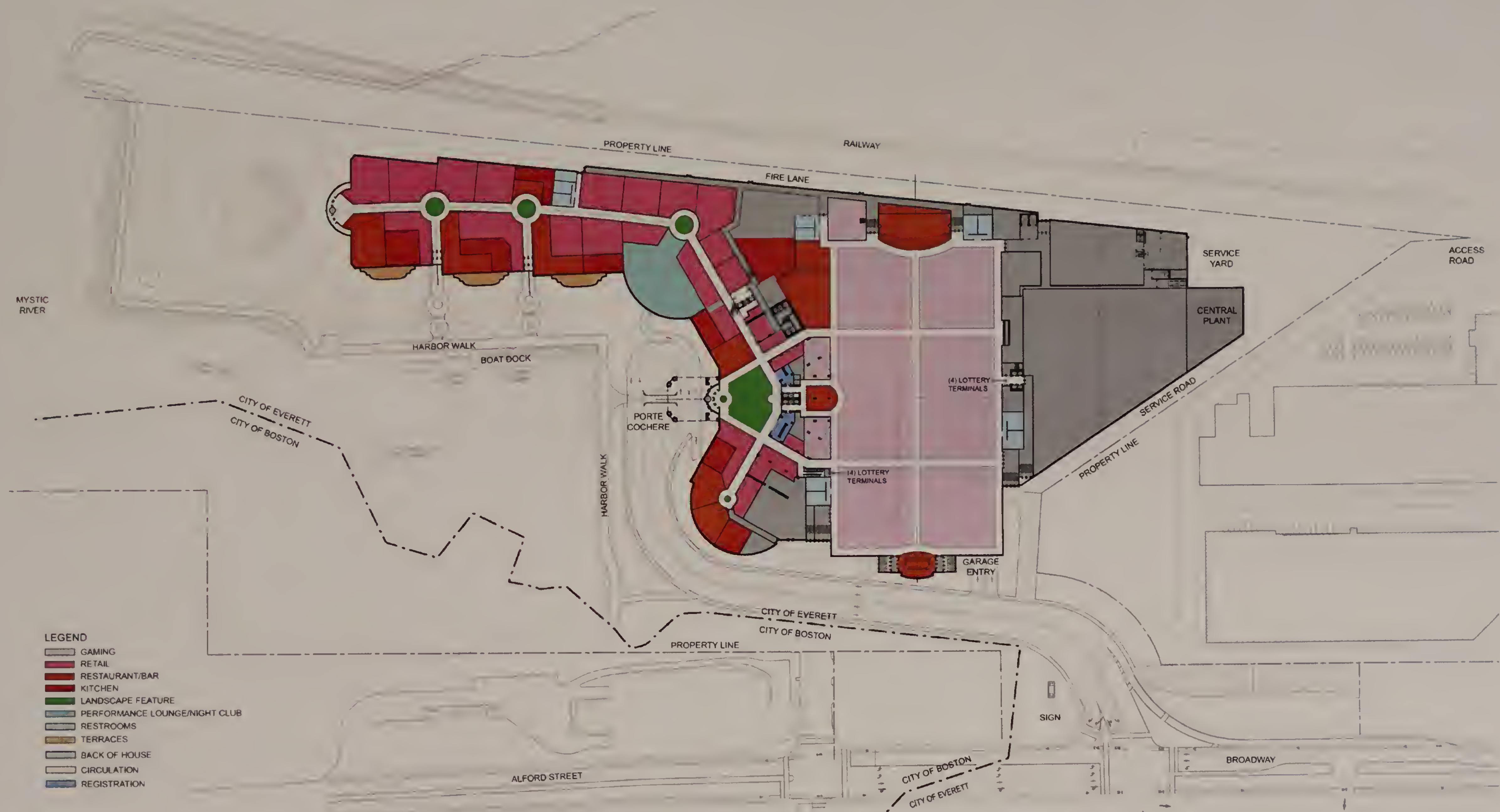


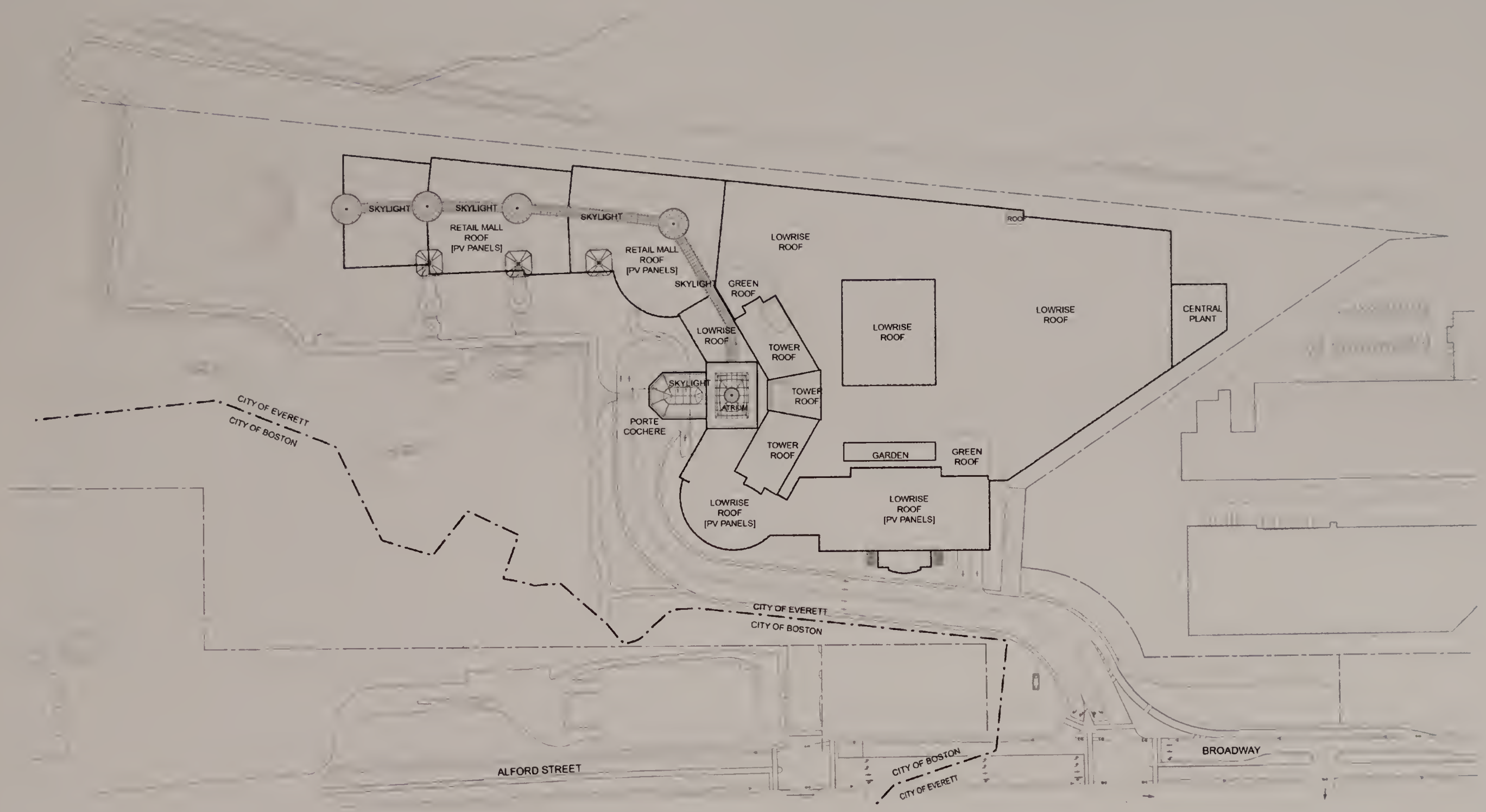
Figure 2-5
Alternative Site Configuration
Source: Wynn Design & Development, 2013



Wynn Everett
Everett, Massachusetts

Figure 2-6
Casino Level Floor Plan
Source: Wynn Design & Development, 2013

Figure 2-7
Spa/Convention Level Floor Plan
Source: Wynn Design & Development, 2013



Wynn Everett
Everett, Massachusetts

Figure 2-8
Roof Level Plan
Source: Wynn Design & Development, 2013

Figure 2-9
High-Rise Floor Plan Levels 1-25
Source: Wynn Design & Development, 2013

Figure 2-10
Harborwalk
Source: Wynn Design & Development, 2013

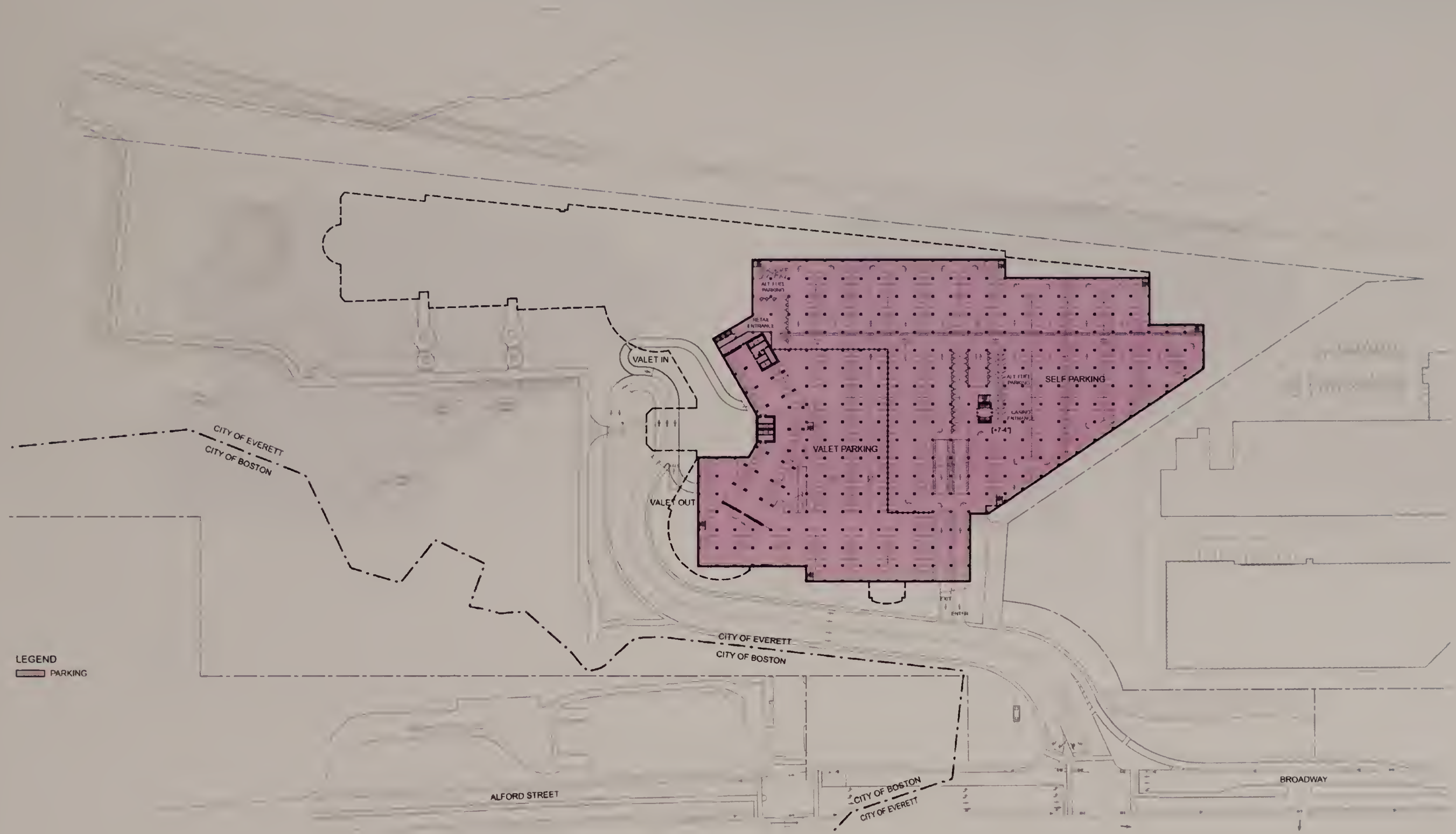


Figure 2-11
Parking Level B1
Source: Wynn Design & Development, 2013

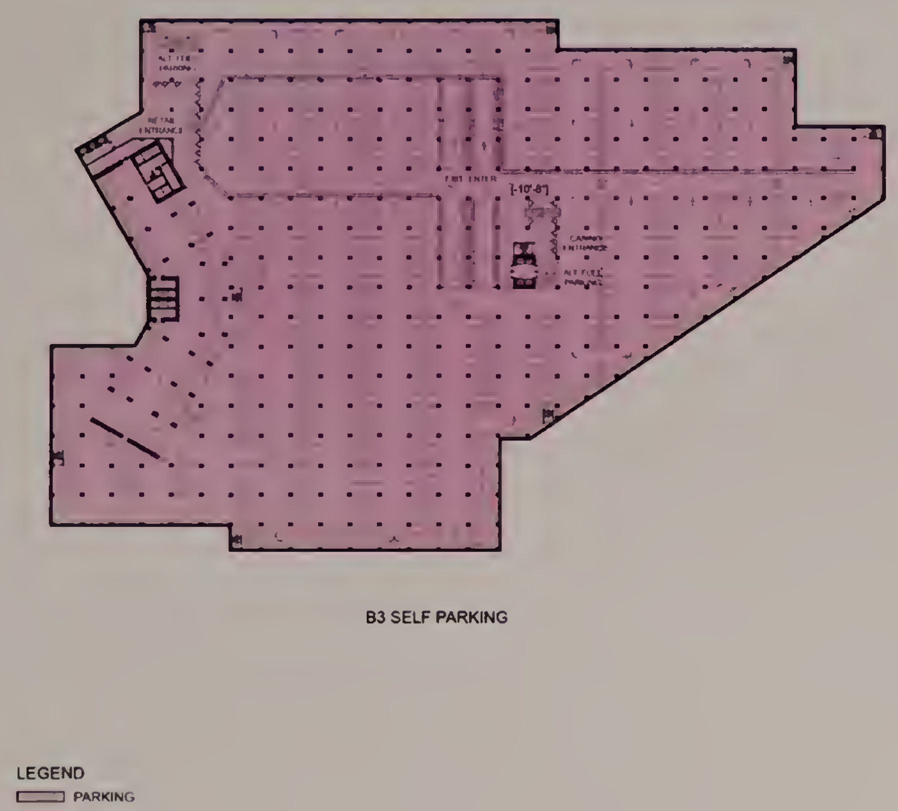
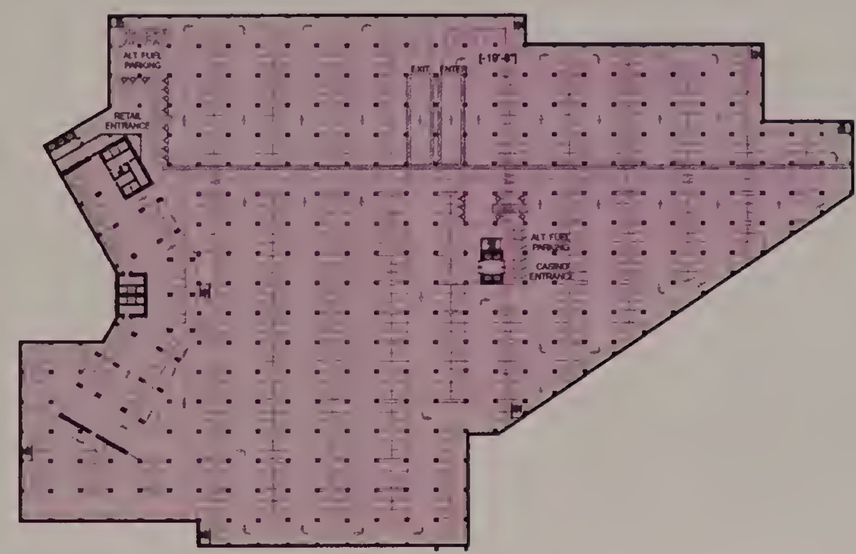


Figure 2-12
Parking Levels B2 and B3
Source: Wynn Design & Development, 2013

PARKING TABULATION			
LEVEL	VALET	SELF	TOTAL
B1	298	446	744
B2	352	392	744
B3	0	704	704
B4	0	717	717
TOTALS	650	2259	2909

NOTE: STAFF PARKING OFF SITE



B4 SELF PARKING

LEGEND
PARKING

Figure 2-13
Parking Level B4
Source: Wynn Design & Development, 2013

Wynn Everett
Everett, Massachusetts

Figure 2-14
Perspective View from Mystic River
Source: Wynn Design & Development, 2013

Figure 2-15
Perspective View of Porte-Cochere
Source: Wynn Design & Development, 2013

Wynn Everett
Everett, Massachusetts

Figure 2-16
Perspective View from Entry Drive
Source: Wynn Design & Development, 2013

Wynn Everett
Everett, Massachusetts

Figure 2-17
Perspective View of Harbor Park
Source: Wynn Design & Development, 2013

Wynn Everett
Everett, Massachusetts

Figure 2-18
Perspective View of Port Cochere Approach
Source: Wynn Design & Development, 2013

Wynn Everett
Everett, Massachusetts

Figure 2-19
Perspective View of Atrium Winter Garden Interior
Source: Wynn Design & Development, 2013

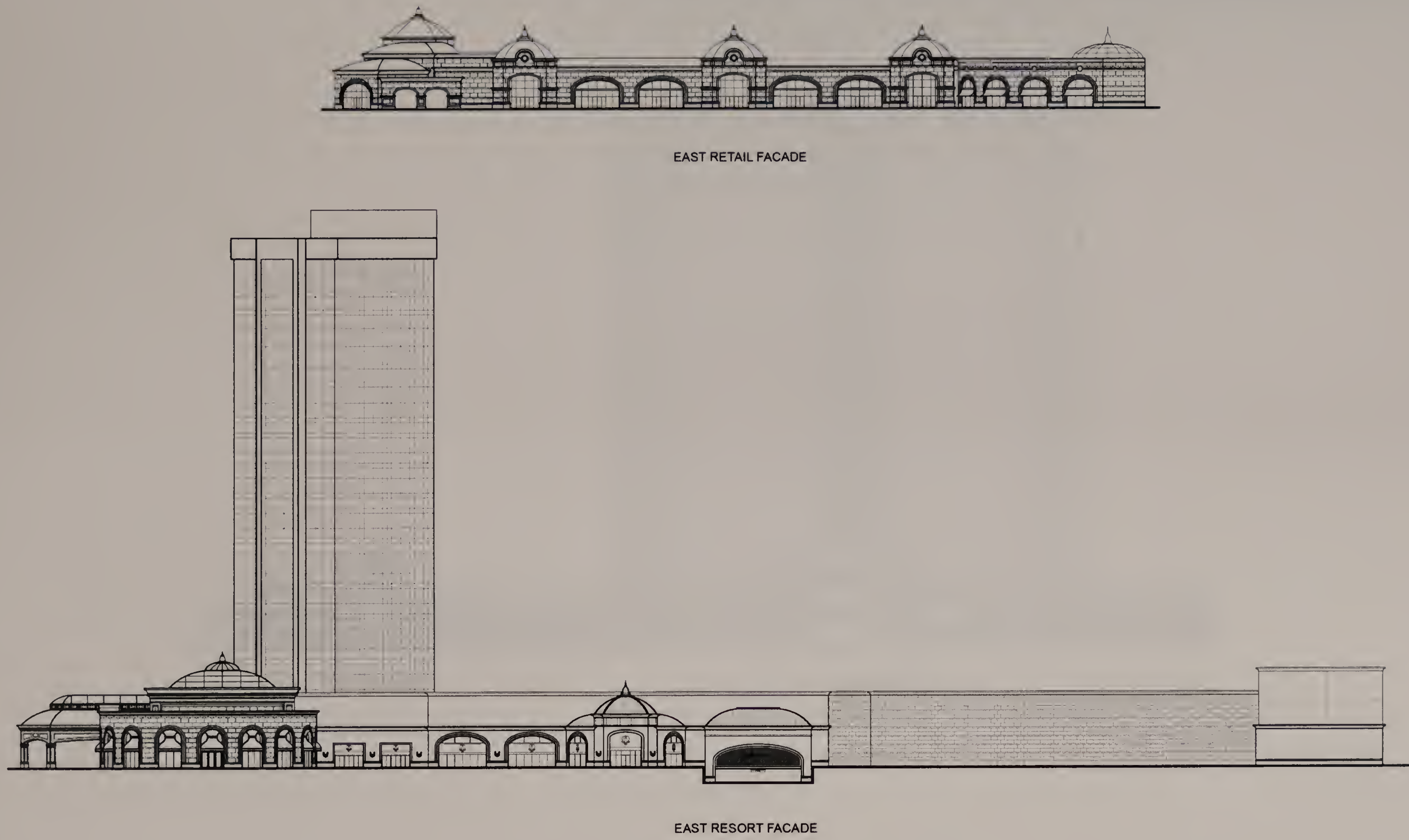


Figure 2-20
Overall East Elevation
Source: Wynn Design & Development, 2013

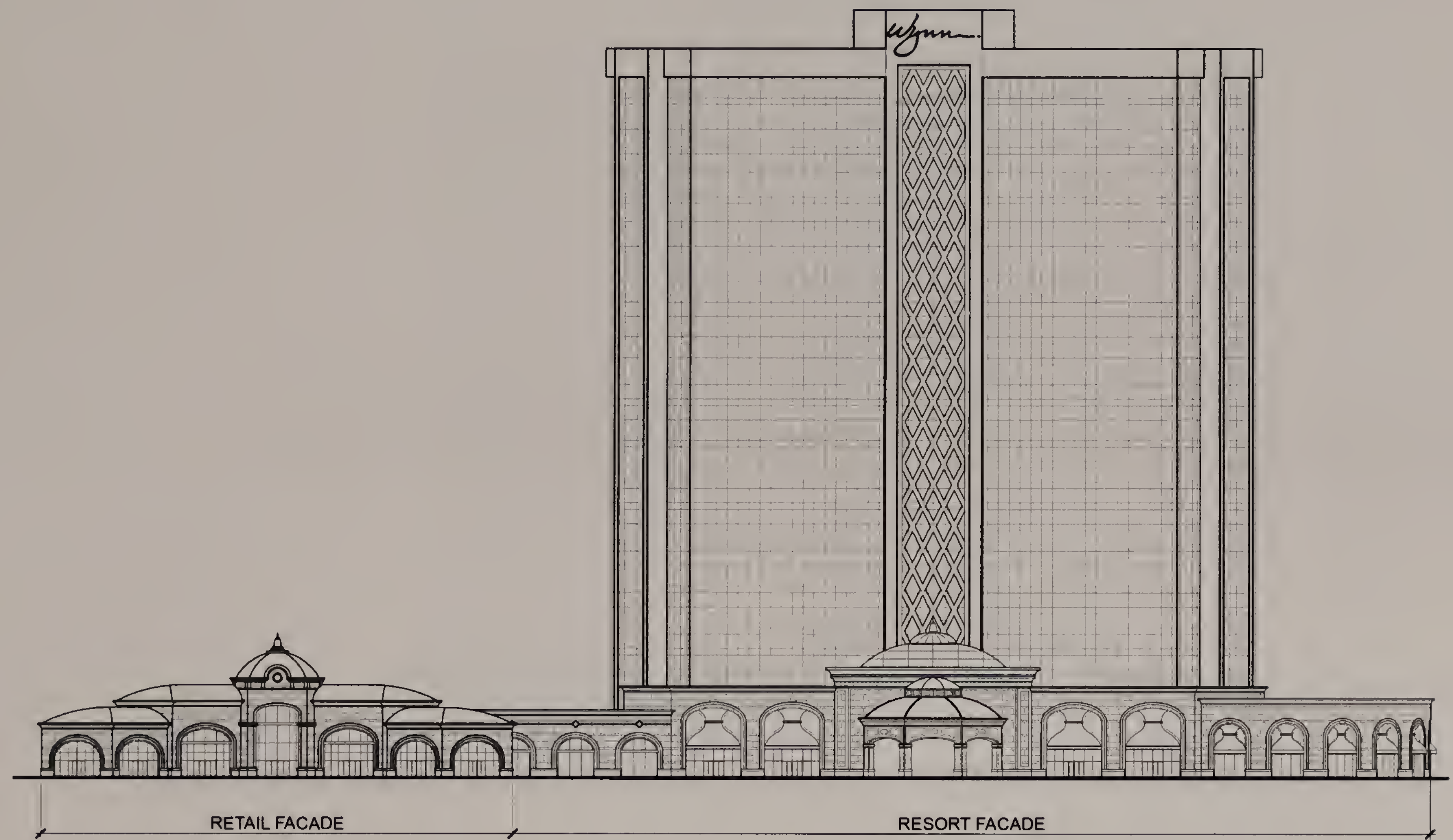
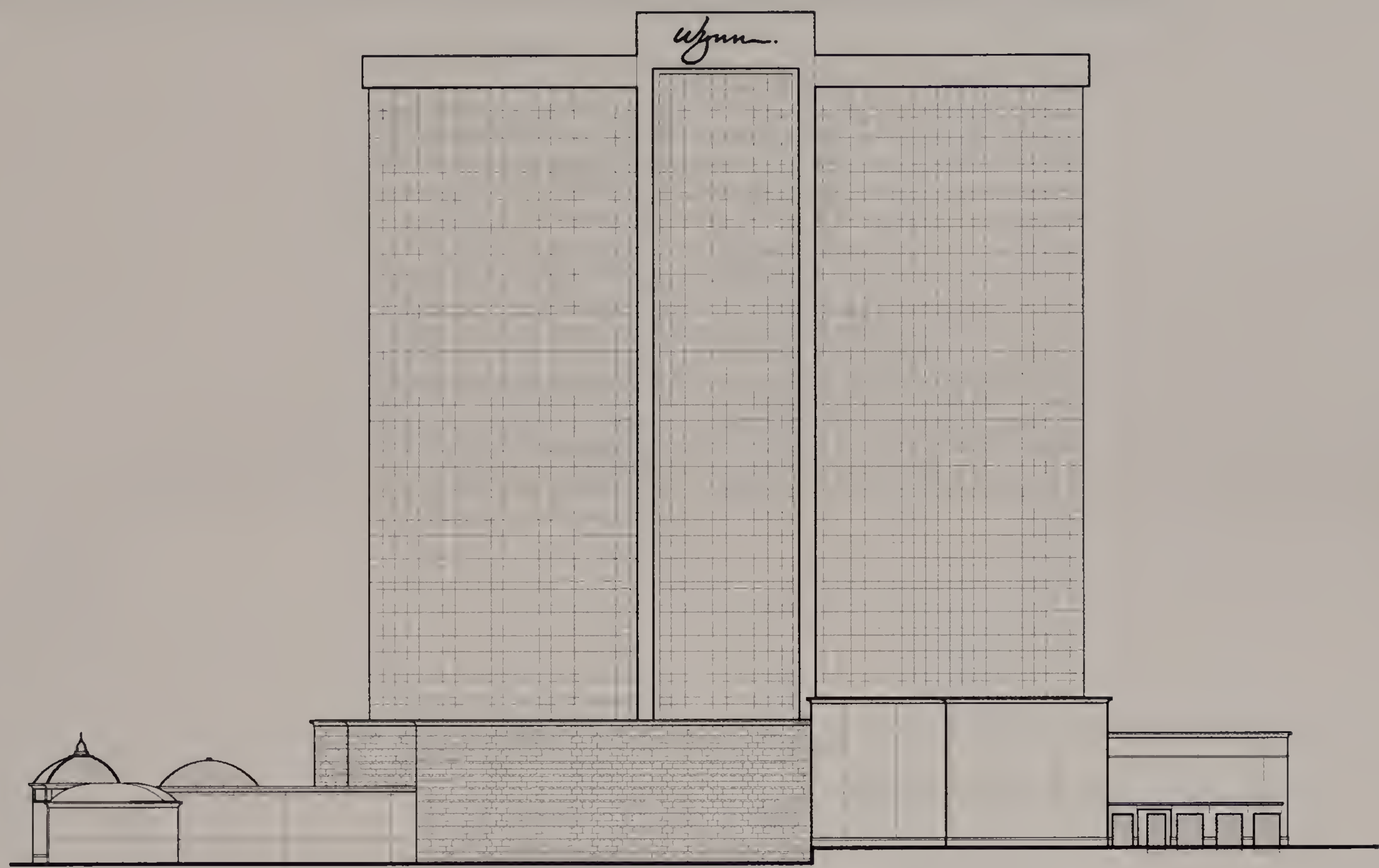
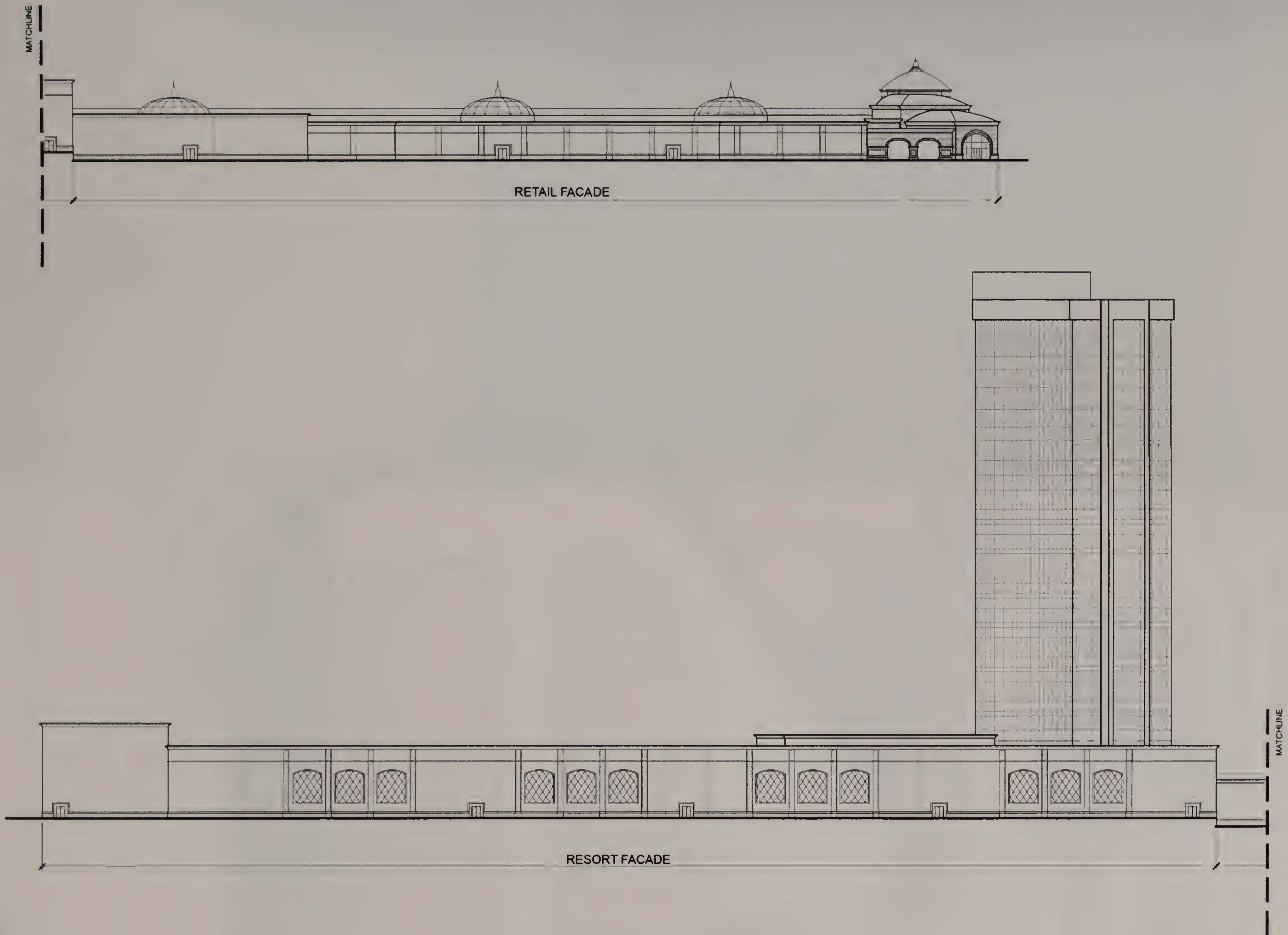


Figure 2-21
Overall South Elevation
Source: Wynn Design & Development, 2013



Wynn Everett
Everett, Massachusetts

Figure 2-22
Overall North Elevation
Source: Wynn Design & Development, 2013



Wynn Everett
Everett, Massachusetts

Figure 2-23
Overall West Elevation
Source: Wynn Design & Development, 2013

Wynn Everett
Everett, Massachusetts

Figure 2-24
Landscape Plan
Source: Wynn Design & Development, 2013

Wynn Everett
Everett, Massachusetts

Figure 2-25
Proposed Pedestrian Connections
Source: *Shadley Associates P.C., 2013*

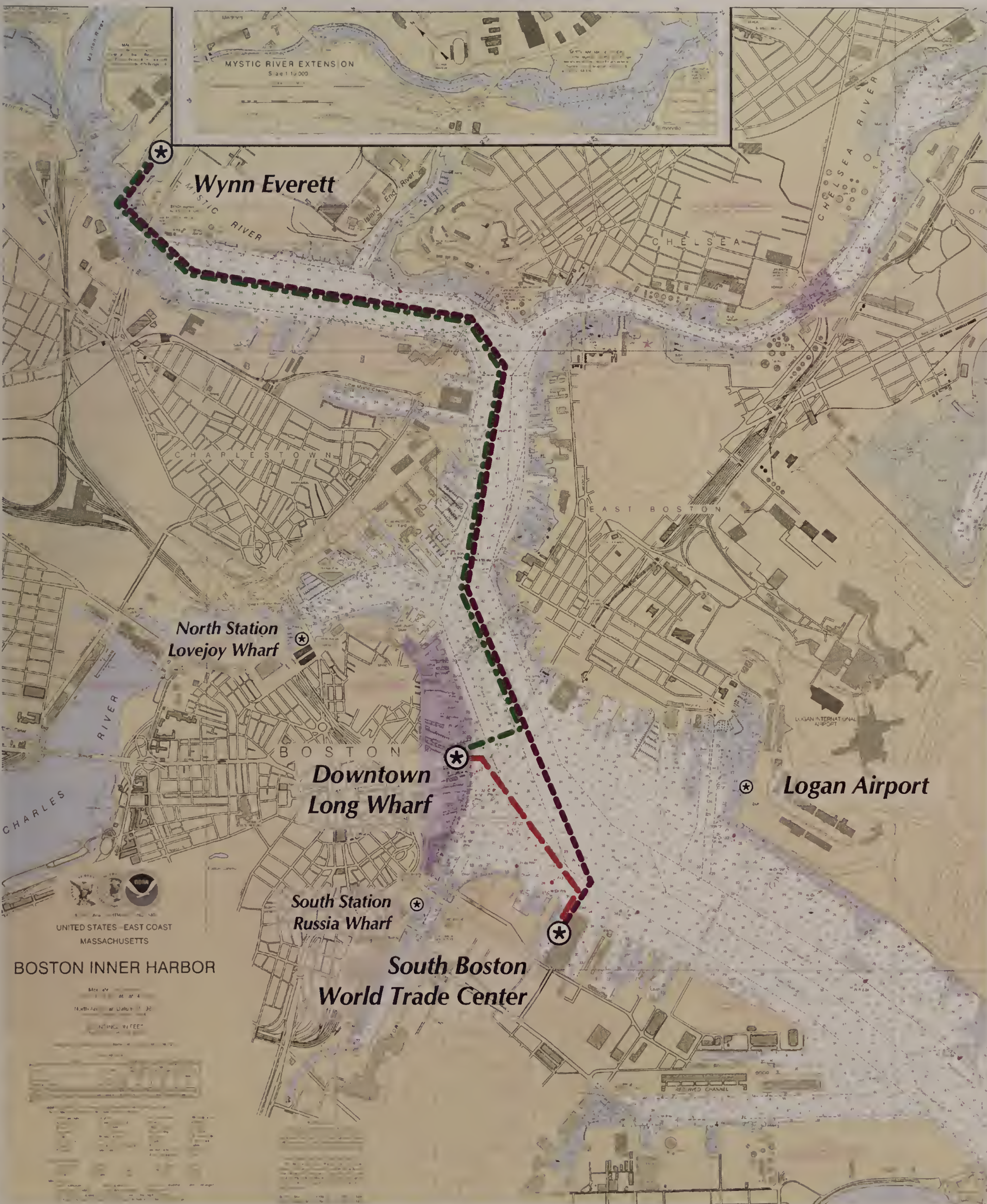


Figure 2-26
Proposed Passenger Ferry Route to Boston
Source: *Norris & Norris Associates, 2013; Fort Point Associates, 2013*

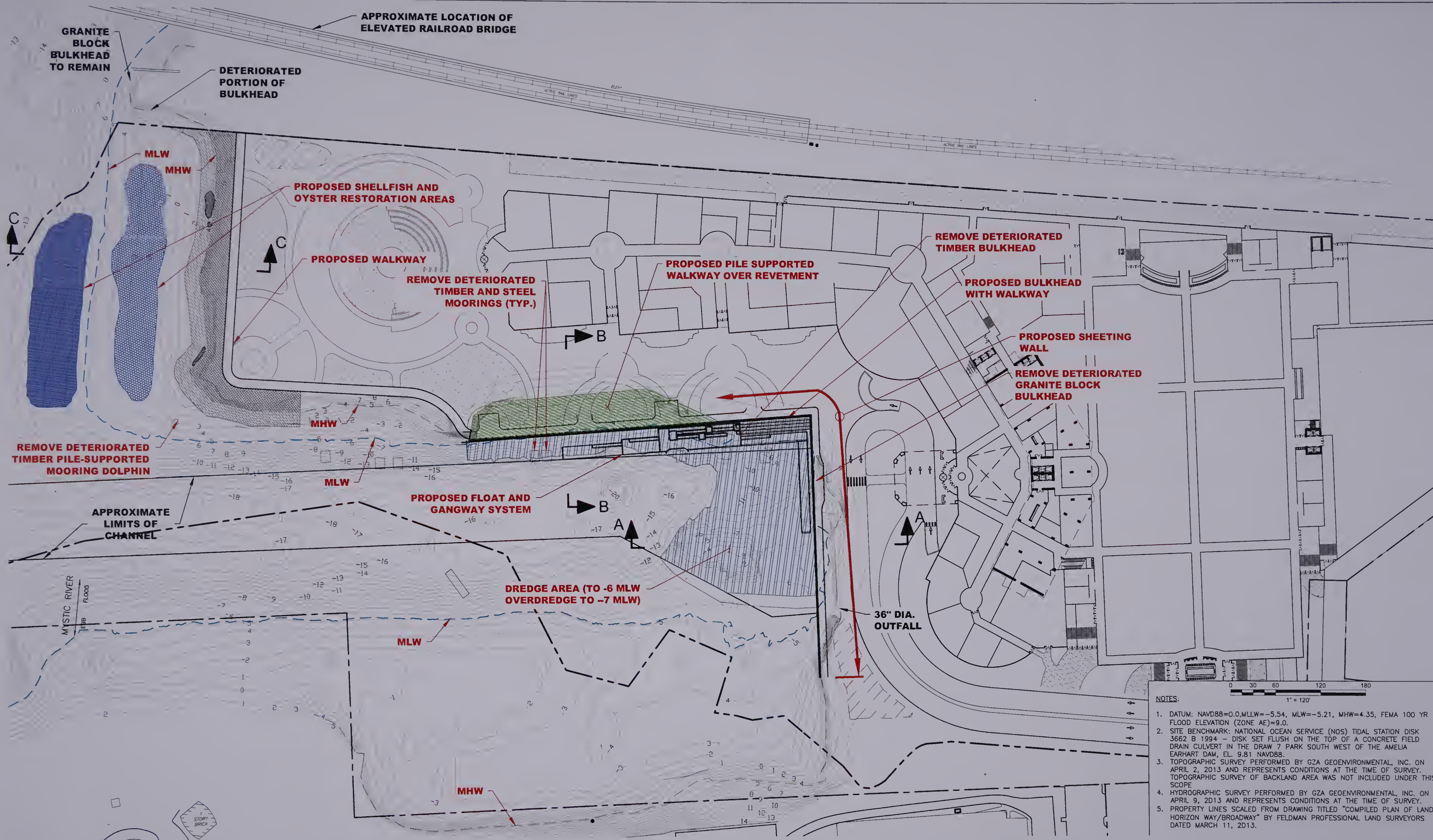
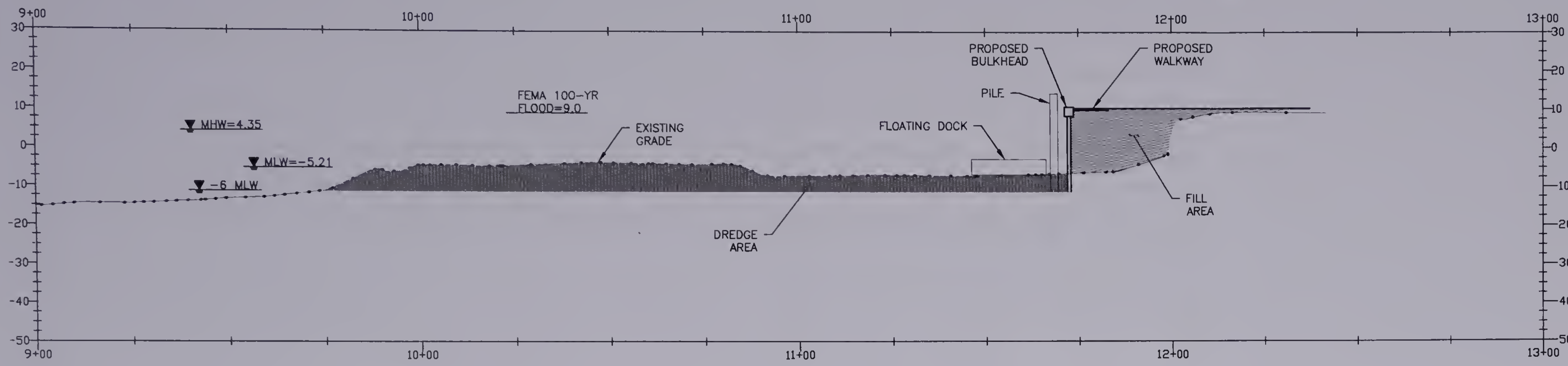
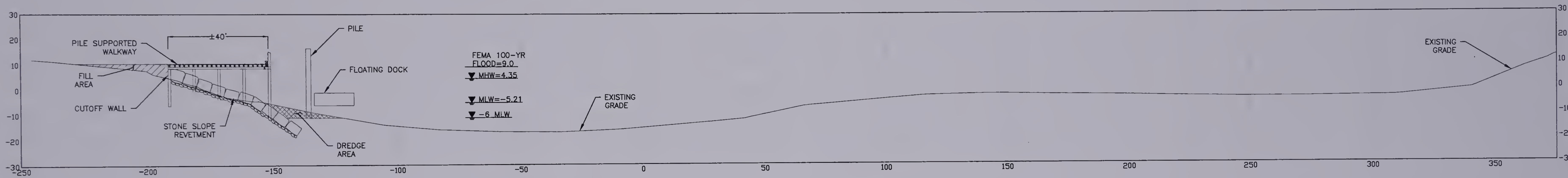


Figure 2-27
Proposed Waterside Work Plan
Source: *GZA GeoEnvironmental, Inc., 2013*



SECTION A–A
VERTICAL SCALE:1"=40'
HORIZONTAL SCALE:1"=40'



SECTION B–B
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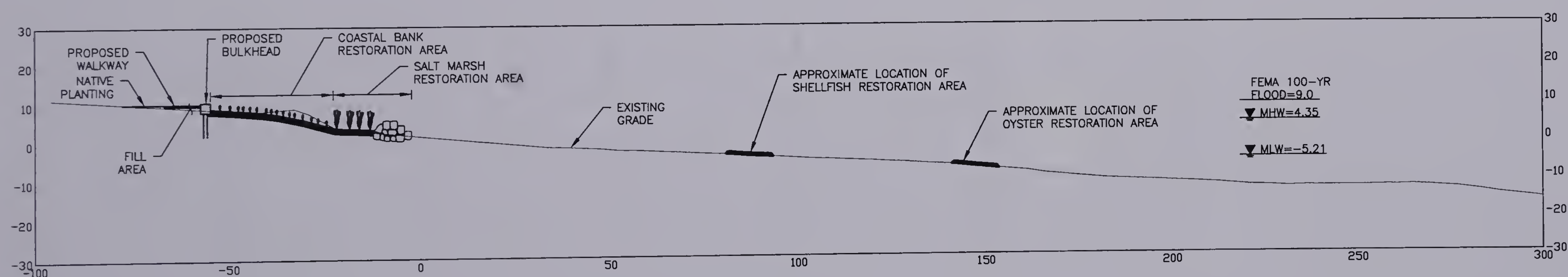

SECTION C–C
VERTICAL SCALE:1"=40'
HORIZONTAL SCALE:1"=40'

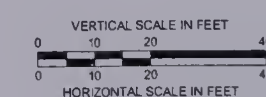

Figure 2-28
Proposed Waterside Work Sections
Source: GZA GeoEnvironmental, Inc., 2013

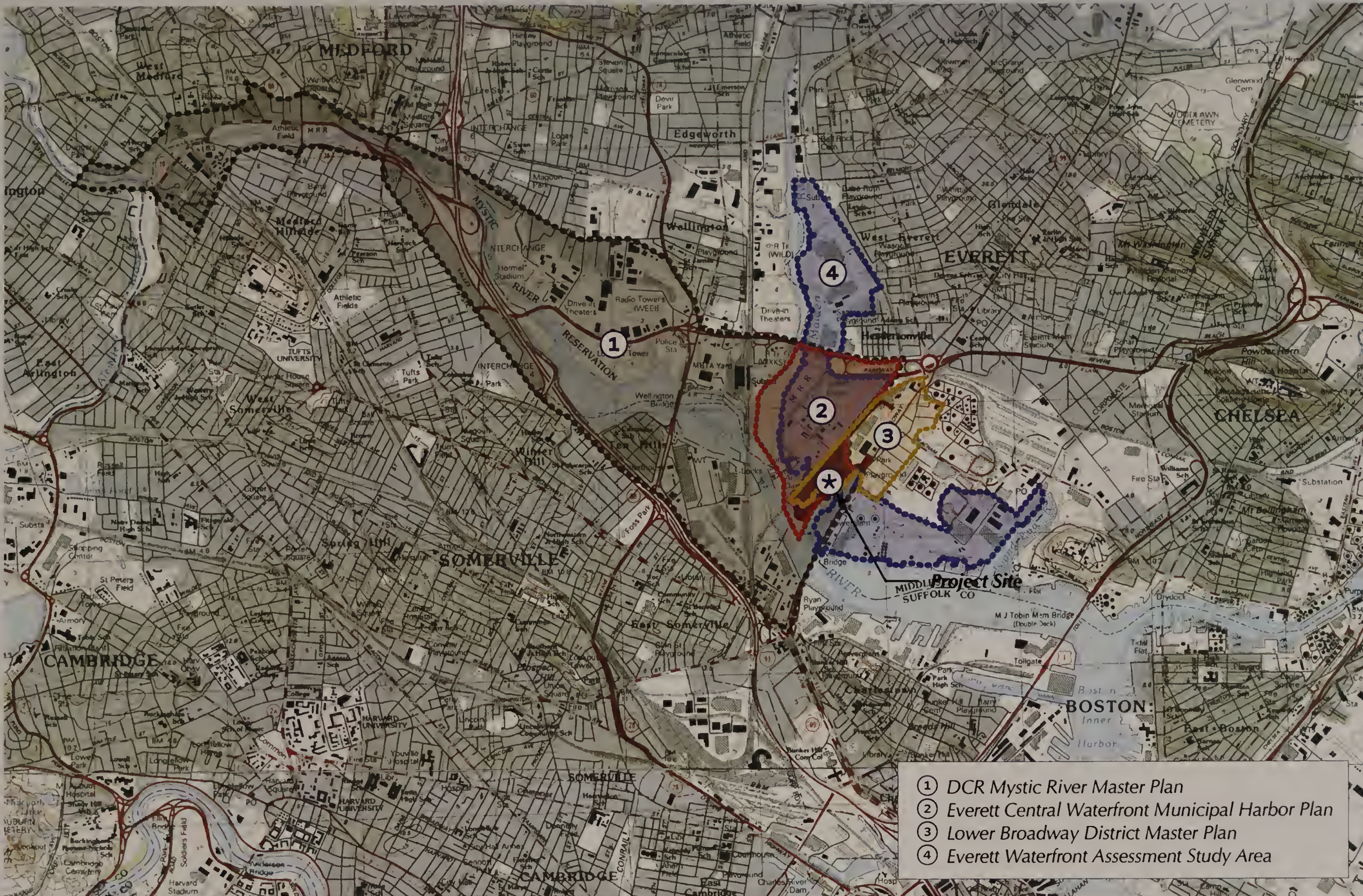

Figure 2-29
Regional Planning Context

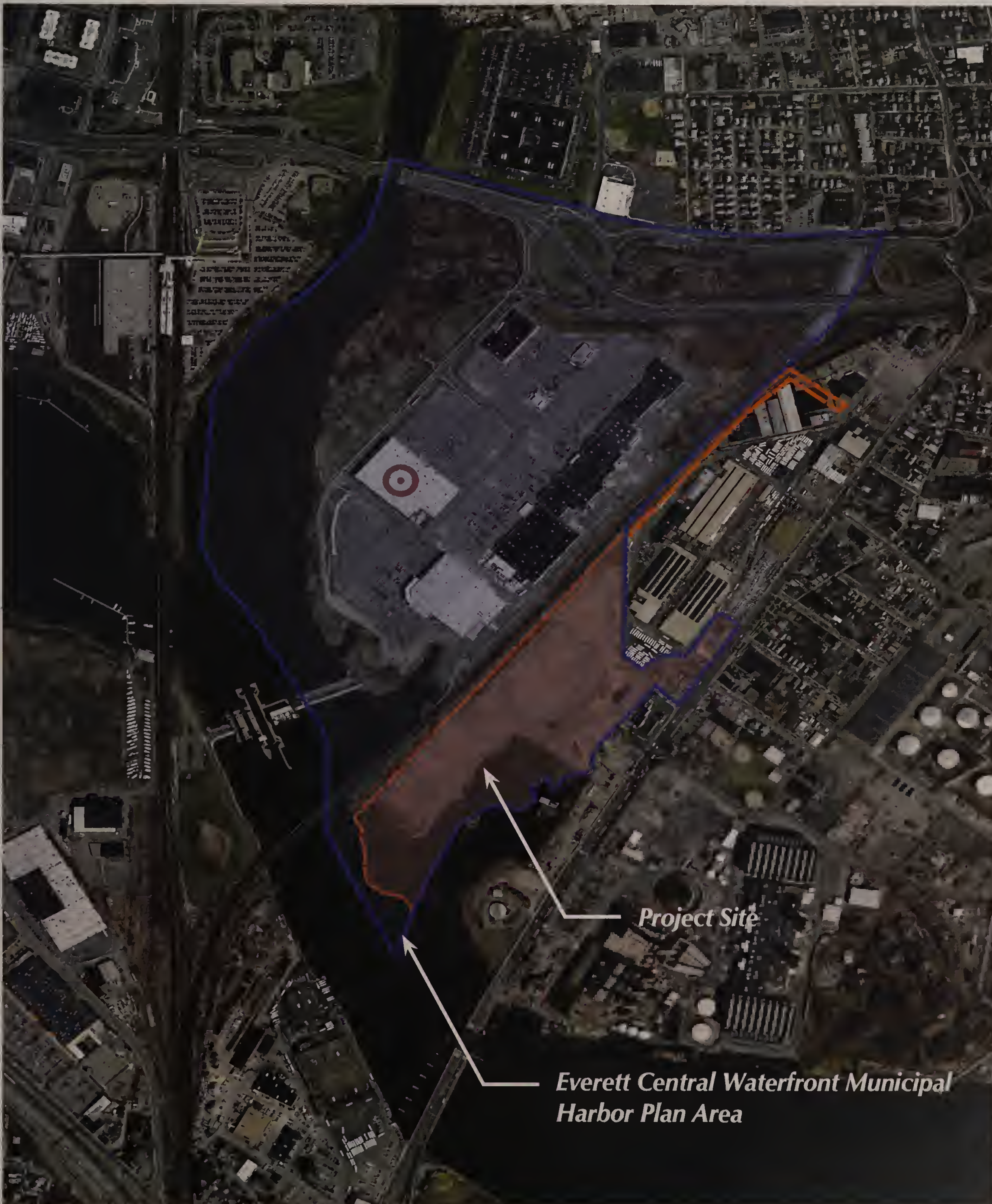

Figure 2-30
Municipal Harbor Plan Area
Source: Fort Point Associates, 2013

Chapter 3

Project Alternatives

CHAPTER 3: PROJECT ALTERNATIVES

As required by the Secretary's Certificate on the EENF (the "Certificate"), this chapter further describes project programs that were put forth in the EENF and also considers three project development alternatives (each, a "Project Alternative" and collectively, the "Project Alternatives"). These include the proposed Project (the "Project"), which is the preferred Project Alternative, and two other Project Alternatives:

- ***Reduced Intensity Alternative A***: in which the overall casino and associated support functions are reduced on the Project Site and the hotel is reduced in size and in the number of keys.
- ***Mixed Use Alternative B***: Lower Broadway District ("LBD") Plan (i.e. a feasible mixed use development project that does not include a resort casino).

In addition, in response to the Certificate, this chapter will also describe dredging alternatives that have been considered to safely and effectively accommodate removal of contaminated sediments from the existing harbor channel to allow for construction and operation of a floating public dock system that provides ample water draft for water transportation and recreation vessels.

3.1 EENF PROGRAM ALTERNATIVES

During the project planning stages, the Proponent has thoughtfully evaluated a number of options regarding the size and scale of the Project. The EENF Program (i.e., the program selected for analysis in the EENF) was comprised of a more moderate development proposal (551 hotel rooms) likely to achieve a cost-benefit ratio to enable the realization of the many mitigation and public benefits put forth in the EENF and in the Host Community Agreement.

During the course of project planning and environmental review, the Project needs were evaluated more thoroughly and the Proponent identified an opportunity to explore the DEIR Program, an optimized project program. The DEIR Program reduces some of the components of the Project but increases the area of landscaped open space adjacent to the harborwalk, providing additional areas for public use on the Project Site. A brief description of the proposed Project and a discussion of the high-range alternative described in the EENF are provided below.

3.1.1 EENF PROGRAM

The EENF evaluated a 2.9 million square foot resort and casino that included: a 551-room luxury hotel tower, over 250,000 square feet of retail and dining options, over 160,000 square feet of gaming space, enclosed parking, entertainment, and meeting

facilities for business customers and large groups. This program was described as the "Low-Range" alternative (the "EENF Low-Range Program").

In addition to the 300 foot hotel high-rise (613,244 square feet), the EENF Low-Range Program was comprised of two pedestrian-level tiers. The ground level included gaming (162,625 square feet), retail, and public space, including a winter garden, food and beverage, and entertainment and other service functions (430,203 square feet). The spa level contained meeting rooms, spa/gym, and other service functions (176,825 square feet). In addition, parking to accommodate the EENF Low-Range Proposal was to be provided on five below-grade levels and in a six-level above-grade garage (1,506,976 square feet). Open space was to be lushly landscaped or hardscaped.

3.1.2 EENF HIGH RANGE ALTERNATIVE

As requested in the Certificate, the Proponent has further evaluated a more intensive build scenario, identified as the high-range alternative in the EENF (the "EENF High-Range Alternative"). Although the EENF High-Range Alternative could potentially be constructed on the Project Site, the Proponent has concluded that the EENF High-Range Alternative would not be consistent with the "Urban Wynn" concept, and would not be the optimal project for the community or the region.

The EENF High-Range Alternative included up to 700 rooms and was up to 420 feet in height. With this alternative, there would be additional sewer, water, energy, and transportation impacts. Potential airspace intrusion and impacts to Logan Airport were also potential impacts from the 420 foot high tower.

Land impacts were not expected to increase significantly, with additional parking and hotel rooms accommodated in the already compact proposed Project footprint. Other program elements, such as the retail, casino, spa, and dining features of the EENF High-Range Alternative remained relatively consistent with the Program and the Project. The following impacts from the EENF High-Range Alternative may be reasonably anticipated:

- **Transportation**

  Friday Daily: 30,466 vehicle trips

  Friday Evening Peak-Hour: 2,788 vehicle trips

  Saturday Daily: 36,916 vehicle trips

  Saturday Peak-Hour: 4,460 vehicle trips

- **Wind and Shadow**

  An increase in height of 120 feet over the EENF Low-Range Alternative tower height and a marginal decrease in width would increase already anticipated shadows further off-site. Additional height creates only minor differences in pedestrian level winds.. Wind and shadow impacts would not be experienced on the water or harborwalk. Adjacent land uses would not see significant effects from wind.

- **Utilities**

  The addition of 149-200 hotel rooms would increase demands for sewer, water, electricity, and HVAC. These changes were not likely to have a significant impact on existing services to the Project Site or to significantly increase greenhouse gas emissions assuming that mitigation measures would be identified and implemented for the high-range alternative.

The EENF High-Range Alternative has been eliminated from consideration by the Proponent and will therefore not be evaluated in more detail for this DEIR.

3.2 DESCRIPTION OF PROJECT DEVELOPMENT ALTERNATIVES

The Proponent is has developed three Project Alternatives that are analyzed in detail in this DEIR: (1) the Project, (2) a "Reduced Intensity Alternative," and (3) a "Mixed Use Alternative." The Project as well as the two Project Alternatives are all proposed on Project Site and involve the remediation and adaptive reuse of a brownfield site. After evaluating the compatibility with their individual business model, environmental impacts, costs, return and benefits posed by the three project development scenarios, the Proponent identified the proposed Project as the preferred Project Alternative.

3.2.1 THE PROJECT

The Project comprises the construction of a 2,619,234 square foot integrated resort casino on the Project Site. The Project includes a 500-room, 386 foot high luxury hotel (627,073 square feet) and a gaming facility comprised of approximately 167,880 square feet. The gaming facility is expected to include 3,072 slot machines and 150 gaming tables (3,972 total gaming positions). The 500-room hotel will offer the largest average room sizes in the luxury hotel market in the Boston region with a standard room size greater than 600 square feet. Other features include 89,140 square feet of retail space, 57,591 square feet of food and beverage, including six restaurants and a nightclub, 34,998 square feet of convention and meeting space, a 13,110 square foot spa and gym, and a 5,322 square feet four-season atrium garden located at the main lobby entrance. An estimated 310,248 square feet of back-of-house space as well as 57,339 square feet of front-of-house service including front-

of-the-house support, restroom space and lobby lounge will support the DEIR Program.

The Proponent proposes to construct a 1.25 million square feet parking structure on the north side of the Project with four below-grade levels that will provide 2,909 self-serve and valet parking spaces. Employee parking will be accommodated off-site with approximately 800 spaces supported by convenient shuttle service to and from the Project. See Figure 3-1, Proposed Project.

Mitigation measures expected to be provided in connection with the Project include: remediation and removal of contaminated soils and sediments, transportation improvements to the surrounding transportation and transit networks, shoreline restoration and cleanup, and economic and community benefits including job creation.

3.2.2 ALTERNATIVE A: REDUCED-INTENSITY ALTERNATIVE

The Reduced Intensity Alternative reflects a program for a "standard" casino more commonly located in most regional casino or gaming markets outside of Las Vegas today. Although the Proponent has not developed this type of casino, based on industry research, a standard regional casino tends to average 100,000 square feet of casino space housing approximately 2,400 casino positions (~2,000 slot machines and ~75 gaming tables). The hotel would include 250 standard hotel rooms and there would be a substantially reduced retail offering, including minimal food and beverage, and entertainment amenities. Parking would be provided on-site for 2,500 vehicles. Environmental impacts and effects associated with the Reduced Intensity Alternative are found in Table 3-2, Summary of Development Alternatives. See Figure 3-2, Alternative A: Reduced-intensity Alternative.

Mitigation measures associated with the Reduced Intensity Alternative would include transportation improvements and environmental cleanup. Revenues from the Reduced Intensity Alternative would not justify investment in the waterside cleanup, dredging, and water transportation. The Reduced Intensity Alternative is expected to be in compliance with Chapter 91 requirements, as compared with the Project and Mixed Use Alternative (described below), and will not trigger substitutions or require offsets that are defined by Everett's recently completed Everett MHP. Public access to the waterfront would be maintained but not expanded to the extent envisioned by the Project as described in Chapter 2, Project Description.

Given the strength and longevity of the Wynn brand worldwide, and the targeted customer base, the Proponent would not choose to pursue a standard regional project that would be in conflict with its mission and objectives. In addition, based on the Proponent's internal financial projections, a Reduced Intensity Alternative, in

combination with the existing fixed costs inherent in the Gaming Commission's stated financial parameters and local-community agreements would not enable the Proponent to achieve its required financial return metrics needed to support the fees and payments required by the Gaming Commission and host and surrounding community agreements.

3.2.3 ALTERNATIVE B: MIXED USE ALTERNATIVE (LOWER BROADWAY DISTRICT MASTER PLAN)

The "Mixed Use Alternative" consists of a mixed use development as conceptualized in Everett's recently completed LBD Plan. It is assumed that the Mixed Use Alternative would develop the Project Site to the capacity allowed under the new Lower Broadway Zoning and Design Guidelines, which Everett intends to adopt by the end of 2013. The adoption process requires review and approval by both the Planning Board and the City Council. See Figure 3-3, Alternative B: Mixed Use Alternative.

The Mixed Use Alternative consists of up to approximately 2,083,710 square feet of new development, a difference of 535,524 square feet from (less than) the Project. The Mixed Use Alternative has a similar gross square footage, but differs in the program elements it includes. Proposed uses include a 57,000 square feet hotel, approximately 1,366,210 square feet of multi-family residential space in 1,366 units, 38,000 square feet of office space, and roughly 154,000 square feet of retail and conference space. The Mixed Use Alternative does not include a gaming facility. The Mixed Use Alternative proposes to construct roughly 1,670 structured parking spaces and 144 on street parking spaces. These buildings could be developed concurrently or phased over a period of years by one or more developers.

The Mixed Use Alternative is considered by Everett to be a viable development alternative for the Project Site. Revenues to Everett would be realized in the form of property taxes, job creation, and other stimuli to the local economy. Revenues from the commercial and office components of the Mixed Use Alternative may be expected to be offset by costs to Everett associated with residential uses and development.

3.2.4 SUMMARY OF PROGRAM ALTERNATIVES

Table 3-1 contains a summary of the building program elements for each Development Alternative to support a better understanding of the relative impacts of a resort casino compared with a conceptualized mixed use development.

Table 3-1, Summary of Development Alternatives

Program Summary	The Project	Reduced Intensity Alternative A	Mixed Use Alternative B
Casino			
Square footage – Total	167,880	101,843	0
Gaming positions – Total	3,972	2,450	0
Food & Beverage			
Square footage – Total	57,591	14,440	Not Specified
Tenant Retail			
Square footage – Total	89,140	10,000	154,000
Hotel			
Square footage – Total	627,073	313,348	57,000
Hotel height – Feet	386	150	Not Specified
Number of rooms	500	250	Not Specified
Meeting Space			
Square footage – Total	34,998	0	50,000
Spa/Gym			
Square footage – Total	13,110	0	0
Services*			
Square footage – Total	57,339	22,146	0
Back-of-House			
Square footage – Total	310,248	206,930	Not Specified
Office Space			
Square footage – Total	0	0	38,000
Residential Units			
Square footage – Total	0	0	1,366,210
Units-Total			1,366
Parking			
Square footage – Total	1,250,000	1,003,750	1,366,210
Total Building Square Footage			
Square footage – Total	2,619,234	1,673,876	2,083,710

*Services include restrooms, miscellaneous uses and unspecified Front-of-House space.

3.3 ENVIRONMENTAL IMPACTS OF PROJECT ALTERNATIVES

This analysis looks at the Project Alternatives' impacts on ground cover, wastewater, trip generation, wetlands resources, as well as how the proposed Project Alternatives differ within the jurisdiction of the Commonwealth's Chapter 91 Waterways Regulations (the "Waterways Regulations"). After evaluating the environmental impacts, costs and benefits of the Project Alternatives, the Proponent has identified the Project as the preferred Project

Alternative. See Table 3-2, Summary of Jurisdictional Activities in Coastal Resource Areas, and Table 3-3, Summary of Environmental Impacts of Project Alternatives.

3.3.1 THE PROJECT

The Project would result in 19.42 acres of impervious area and 7.42 acres of open space on the Project Site. While the Project would increase impervious surface area, environmental cleanup efforts will reduce the uncontrolled flow of stormwater carrying pollutants into the Mystic River and will remediate historic contamination and neglect that have restricted public access to the waterfront and the Project Site for over a century. In contrast to the Mixed Use Alternative, the Project will create a larger contiguous open space along the Mystic River that will engage and re-connect visitors and Everett residents with their waterfront.

The Project would have a potable water demand of approximately 251,271 gallons per day (gpd) and would generate approximately 228,428 gpd in wastewater flows. The Project will be a significant local and regional attraction, and it is anticipated the Project will generate approximately 21,552 new average weekday trips and 25,456 new average weekend trips. The nature of these trips would not conflict with peak traffic periods during weekday or weekend peak traffic hours.

The Project is located within and adjacent to tidally-affected portions of the Mystic River below the Amelia Earhart Dam. As designed, the Project would alter and enhance wetland resource areas as described in Table 3-2.

Table 3-2 Summary of Jurisdictional Activities in Coastal Resource Areas

State Resource Area Type	Alterations (sf except as noted)					
	Permanent Impacts		Temporary Impacts		Enhancement	
Land Under the Ocean (LUO)	10,400±	Dredging & Floating Dock and Gangway System	30,250 ±	Dredging & Debris Removal	15,000	Creation of oyster bed
Coastal Beaches (CBe) and Tidal Flats (TF)	9,840±	Dredging Conversion to LUO (2,840± sf) Pile Supported Pier/ Walkway (7,000± sf)	17,000 ±	Deteriorated timber bulkhead and shoreline debris removal	25,260±	Salt marsh Creation (10,260±) Clam Bed Restoration (15,000±)
Land Containing Shellfish					30,000±	Creation of Oyster Bed (15,000±) Restored Clam Bed (15,000±)
Coastal Bank	9,310±	Dredging Conversion to CBe (2,310±) New Bulkhead (700±lf) Pile Supported Pier/Walkway (7000±; 335 lf)	10,730 ±	Shoreline Vegetative Enhancement (550± lf) Replacement Bulkhead (465± lf) Shoreline debris removal (1,600± lf)		
Land Subject To Coastal Storm Flowage	18,010±	Site development				
Salt Marsh					10,260±	Saltmarsh Creation
Federal Resource Area Type	**Alterations (sf except as noted)**					
	Permanent Impacts		**Temporary Impacts**		**Enhancement**	
Riverfront Area	23,160±	Site development (additional impacts in association with Santilli Circle traffic improvements and extension of Coastal Harborwalk to the north of the site.)				
Buffer Zone	145,750±	Site development				
Waters Of The US / Navigable Waters Of The US*	15,550±	Dredging area with final development as Floating Dock/Gangway Pile Supported Pier/Walkway Total Dredging volume (12,700 CY)	60,250 ±	Dredging beyond limits of other work (30,250 ±) Shellfish bed establishment (30,000 ±)	24,990±	Living Shoreline: Coastal Bank Revegetation (14,000±) Salt Marsh Creation (10,990±)
Coastal Zone	33± acres	Site Development				

As described in Section 8.2, Chapter 91 Tidelands, portions of the Project are proposed on land that is classified as flowed tideland and filled tidelands under the Waterways Regulations. In October 2013, Everett completed a 6-month inclusive planning process to develop the Everett MHP. Part of the Everett MHP process included an analysis of three proposed build-out scenarios within Chapter 91 Jurisdiction. As designed, the Project includes approximately 190,000 square feet of lot coverage and 272,500 square feet of open space within jurisdiction, which equates to approximately 41% lot coverage and 49% open space on land within Waterways Regulations.

3.3.2 REDUCED INTENSITY ALTERNATIVE

The Reduced Intensity Alternative, which offers a more limited gaming facility, hotel, retail, food, beverage, and entertainment options, would contain more open space (10.27 acres) and less impervious area (14.75 acres) than the Project.

The Reduced Intensity Alternative would have a smaller potable water demand than the Project (approximately 101,558 gpd) and would generate less wastewater flow (approximately 92,325 gpd). The Reduced Intensity Alternative will also see a reduction in traffic impacts. It is anticipated that the Reduced Intensity Alternative would generate approximately 13,404 new average weekday trips, and 15,670 new average weekend trips. Similar to the Project, the nature of these trips would not conflict with peak traffic periods during weekday or weekend peak traffic hours. The scale of this alternative would likely not require a second means of access off of Broadway.

While the overall casino and associated support functions have been reduced as compared to the Project, the "standard" casino program reflected in the Reduced Intensity Alternative will still be located within and adjacent to tidally-affected portions of the Mystic River below the Amelia Earhart Dam. Due to the limited site work and construction of amenities, the Reduced Intensity Alternative would not provide the extensive public access and amenities for water transportation and boat docking. Shoreline stabilization would be required, but this alternative would not include dredging of contaminated sediments nor include the "living shoreline" improvements. The Reduced Intensity Alternative has not been sufficiently advanced to determine specific wetland resource area impacts, but an estimate is provided in Table 3-3. Portions of the Reduced Intensity Build will also be subject to Chapter 91 Waterways jurisdiction. As designed, the Reduced Intensity Alternative includes approximately 84,300 square feet of lot-coverage and 378,200 square feet of open space within jurisdiction, which equates to approximately 18% lot coverage and 82% open space on land within Waterways Regulations.

While the Reduced Intensity Alternative may include more open space and less impervious area on the Project Site and within Chapter 91 Jurisdiction, it will restrict the environmental benefits that the Project is able to provide on-site. As described in Section 3.1.2, the financial projections in combination with fixed costs inherent in cleaning up the existing brownfield would prohibit the Proponent from achieving the necessary financial return to justify the investment in the Reduced Intensity Alternative.

3.3.3 MIXED USE ALTERNATIVE

The Mixed Use Alternative would develop the Project Site into approximately 2.2 million square feet of mixed uses, with a particular emphasis on residential and retail space. The significant difference between the Mixed Use Alternative and the other Project Alternatives lies primarily in the residential uses. As designed, the Project and the Reduced Intensity Alternative do not include housing. In contrast, the Mixed Use Alternative proposes 1,366 units or approximately 1.36 million square feet of residential development. The proposed build-out for the Mixed Use Alternative was identified in the LBD Plan, and contains less open space (6.7 acres) and more impervious area (20.23 acres) than either the Project or the Reduced Intensity Alternative.

The Mixed Use Alternative would demand approximately 226,655 gpd, and would produce approximately 206,050 gpd in wastewater flows. The Mixed Use Alternative would generate approximately 6,740 new average weekday trips and 7,062 new average weekend trips. Due to the fact that the Mixed Use Alternative consists of primarily residential and retail uses, many of these trips would conflict with peak traffic hours, unlike the Project, thereby exacerbating exiting traffic conditions along Broadway and Route 16.

Similar to the Project and the Reduced Intensity Alternative, the Mixed Use Alternative will be built on land that is classified as flowed and filled tidelands and regulated under Waterways Regulations. The Mixed Use Alternative has not been sufficiently advanced to determine specific wetland resource area impacts, but an estimate is provided in Table 3-3. As designed, the Mixed Use Alternative includes approximately 1,204,000 square feet of lot coverage and 273,000 square feet of open space within jurisdiction, which equates to approximately 43% lot coverage and 57% open space on land within Waterways Regulations.

As depicted in Table 3-3, Summary of Environmental Impacts of Project Alternatives, the Mixed Use Alternative would include more impervious area and less open space on the Project Site. The nature of the proposed development under the Mixed Use Alternative would distribute the open space in a fragmented manner among a number of mixed use buildings on the Project Site. This would result in

less contiguous open space along the waterfront under the Mixed Use Alternative than would be provided by the Project or the Reduced Intensity Alternative.

While the Mixed Use Alternative could be developed by one development entity, it is much more likely that the Project Site would be developed under this alternative over a period of years by more than one developer. The significant cost to remediate existing contamination and brownfield conditions could make development on the Project Site less financially feasible for smaller projects and developers. This could reduce the feasibility of the Mixed Use Alternative as compared to the Project, where the Proponent is prepared to develop and remediate the entire Project Site in one phase.

Table 3-3, Summary of Environmental Impacts of Project Alternatives

Environmental Impacts	The Project	Reduced Intensity Alternative A	Mixed Use Alternative B
Ground Cover (Acres)			
Open space	7.42	10.27	6.68
Impervious Areas	Project Site: 17.54 2nd Access: 1.88	Project Site: 14.75	20.23
Wastewater and Water (Gallons Per Day "GPD")			
Water Use (GPD)	251,271	101,558	226,655
Wastewater Generation (GPD)	228,428	92,325	206,050
Trip Generation Summary (Trips)			
Traffic Generation (net new weekday vehicle trips)	21,552	13,404	6,740
Traffic Generation (net new weekend vehicle trips)	25,456	15,670	7,062
Parking Spaces			
Parking Spaces	2,909	2,500	1,670
Wetlands Impacts (Square Feet "sf")			
Temporary Wetlands Impacts (Square feet of alteration)	Table 3-2	NA	NA
Permanent Wetlands Impacts (Square feet of alteration)	Table 3-2	10,000+/-	10,000+/-
State Waterways Regulations Build Out Comparisons (Square Feet "sf")			
Lot Coverage within Jurisdiction (sf)	190,000	84,300	204,000
Lot Coverage within Jurisdiction (%)	41%	18%	43%
Open space within Jurisdiction (sf)	272,500	378,200	273,000
Open space within Jurisdiction (%)	59%	82%	57%

*Vehicle trips include patron auto and taxi trips, tour buses, employee auto trips (park off-site), employee shuttle bus trips to/from off-site parking, and shuttle bus trips to/from MBTA Orange Line.

3.3.4 PROJECT ALTERNATIVE CONCLUSIONS

Of the three Project Alternatives evaluated in this chapter, the Project would provide the best opportunity to overcome the fixed costs of remediating the extensive contamination on the Project Site, allow the Proponent to provide the greatest number of environmental and public benefits, and maximize tax and other revenues for Everett and the Commonwealth.

After evaluating the three Project Alternatives, the Proponent has determined that the Project, as described in Sections 3.1.1 and 3.2.1, is the only feasible Project Alternative that will provide sufficient revenues to meet the objectives set forth in the requirements of the Gaming Act. Financially, the Project is the most likely alternative to achieve a sufficient cost-benefit ratio that will allow the Proponent to realize the many mitigation and public benefits that have been agreed to in the Host Community Agreement and Surrounding Community Agreement with the City of Malden, and in ongoing discussions with other neighboring communities. Environmental remediation and off-site transportation improvements can only be adequately supported by the DEIR Program and scale. In addition, the Proponent is not a developer of mixed use real estate projects and therefore would not undertake the Mixed Use Alternative. If the Proponent does not receive a Gaming License, the LBD Plan mixed use program could potentially be fulfilled over a number of years by another developer, if at all. The recently completed Everett MHP would help to realize this Mixed Use Alternative.

3.4 PROJECT DREDGING ALTERNATIVES

The Project requires dredging to accommodate a floating dock system that provides ample water draft for water transportation and recreation vessels. Based on a review of alternative locations for water access facilities, the extent of proposed dredging represents the most direct practicable and adequate route for vessels to access the Project Site. It is also important to note that the majority of the proposed dredge footprint lies within the historic channel alignment and its associated side slopes.

Other locations were considered for the proposed floating dock system. Placing the floating dock system further into the existing channel from the north face of the embayment would provide additional water depth for boats but would provide less protection than having the floats adjacent to the proposed bulkhead. It would also not be as favorable a point for unloading passengers from transportation vessels, as it would lengthen the pedestrian travel route to the Project. Alternatively, shifting the location of the floats to the southwest along the proposed bulkhead would provide less protection and would still require approximately the same amount of dredging. Therefore, the proposed dredged channel represents the least disruptive and most practical location for this water access route.

Three channel-depth alternatives were also analyzed as potential options:

- The first alternative was to perform no dredging at the Project Site; this approach would not achieve the Project purpose of providing water access for vessels. The existing elevation of the portion of the Project Site along the proposed bulkheads is approximately elevation zero MLW. This existing elevation does not allow for boat access at lower tides and would result in the proposed floating dock system bottoming-out during low tides.

- The second and preferred alternative analyzed and selected is to dredge a channel of sufficient depth for the planned water traffic at the Project Site. Based on the size of the proposed floating dock system and the drafts of the anticipated transportation and recreational vessels that would be using the channel, it was concluded that a dredge depth of approximately six feet below MLW would be sufficient for the Project. Dredging only to this elevation would minimize the potential for adverse impacts to resource areas while still providing ample water depth for the proposed floating dock system and boating access to the Site at all tide levels. This dredge depth would result in approximately 12,700 cubic yards (cy) of sediment being removed from the channel within an area of 45,800± square feet (40,650± square feet in subtidal area with the remainder above MLW).

- The third alternative considered was dredging the existing channel to a greater depth, potentially up to the depth historically dredged, which would have the potential to support future watercraft of greater draft than initially planned. Providing a greater depth would allow future flexibility in water transportation. The existing channel on the Project Site, licensed under Chapter 91 by the Massachusetts Department of Environmental Protection (MassDEP), extends from the Mystic River to the northeast bulkhead within the embayment. The historic dredge depth of this channel ranged from approximately 18 to 25 feet below MLW. While dredging to this dredge depth would allow for boating access to the proposed floating dock system and proposed bulkheads, depths of this magnitude are not required for this Project's waterside uses and dredging to such depths would have greater potential for adverse impacts to resource areas. There is also significant uncertainty as to future watercraft needs in this area. Therefore, dredging to a greater depth than initially needed and with greater potential impact than minimally required has been dropped from further consideration.

3.4.2 DREDGE DISPOSAL ALTERNATIVES

As discussed in Section 8.1.3, the Proponent has evaluated a number of potential options to dispose of the dredge materials. Due to heavy contamination, the most

feasible solution will require dredge materials to be properly de-watered on or off-site before the sediments are transported to an appropriate land fill. Laboratory testing has revealed that the dredge sediments exceed the maximum allowable contaminant levels and therefore will not be permitted to be disposed of in a lined or unlined landfill in Massachusetts, as specified in MassDEP's COMM-97. Therefore, the dredge material for this Project will be taken to a permitted out-of-state landfill for appropriate disposal.

The following section provides a summary of three alternative dredge material disposal options that were deemed infeasible due to levels of sediment contamination.

On-Site Reuse

The grading for the proposed site development does not require a significant amount of filling in relation to the quantity of dredged sediment. Observations during sampling and testing results indicated that the dredge sediment would not represent quality fill when dried and therefore could not be effectively utilized for on-site reuse.

Beach Nourishment

Beach nourishment may be considered if less than ten percent of the material being tested passes through a #200 sieve (0.0075 mm). Because the fine-grained nature of the material at the Project Site exceeds these limits, and given the contaminated nature of the sediment, beach nourishment is not considered a feasible option.

Confined Aquatic Disposal (CAD)

This method of disposal utilizes a hole (or pit) excavated beneath open water that is utilized for the disposal of dredge material, which otherwise could not be disposed of (unconfined) in off-shore waters. Utilization of this method would require the selection of an in-water location that could be excavated to provide the necessary volume for the disposal of the dredged sediment. The embayment would be the most appropriate area for a CAD cell; however, as the embayment was previously dredged and has since silted in with area-deposited material, it is likely that significant excavation (below the level of the proposed dredging) would be required to encounter sediment that could be taken offshore to create the disposal pit. The significant additional excavation required for this method would make this type of disposal impractical for this Project Site.

3.4.3 PROJECT DREDGING CONCLUSIONS

After evaluating the dredging alternatives, the Proponent has concluded that due to degradation of the historic channel, it will not be feasible to accommodate a floating

dock system that provides ample water draft for water transportation and recreation vessels without future dredging. Water transportation is an integral component to the Project's transportation-mitigation and environmental-remediation efforts. The preferred dredging alternative is the second channel depth alternative that will dredge the historic channel to six feet below the MLW and will provide an appropriate depth to accommodate the anticipated water transportation and recreation vessels, while minimizing the potential for adverse impacts to existing resource areas.

Figure 3-1
Proposed Project
Source: *Wynn Design & Development LLC, 2013*

Figure 3-2
Alternative A: Reduced Intensity Build
Source: Wynn Design & Development LLC, 2013

Figure 3-3
Alternative B: Mixed Use Alternative
Source: Sasaki Associates, Inc., 2013

Chapter 4

TRANSPORTATION

CHAPTER 4: TRANSPORTATION

4.1 INTRODUCTION

Vanasse&Associates, Inc. and Howard/Stein-Hudson Associates, Inc. (VAI/HSH) have prepared this chapter to present the transportation issues for the Project, including existing traffic and transit conditions, as well as estimated future conditions. This document and its content represent the culmination of on-going coordination and working meetings that have been held with the cities of Everett, Boston, Malden, Medford, Somerville, and Chelsea; the Massachusetts Department of Transportation ("MassDOT"), Highway Division; and Massachusetts Bay Transportation Authority ("MBTA"); and consultation with the Department of Conservation and Recreation ("DCR").

4.1.1 PROJECT DESCRIPTION

As proposed, the Project will entail the development of an approximately 2.6 million square foot integrated resort to be located along the west side of Lower Broadway (Route 99) between Broadway and the MBTA Commuter Rail in Everett, Massachusetts. Figure 4-1, Locus Map, depicts the Project Site location in relation to the existing roadway network.

Access to the Project Site will be provided by way of a boulevard-type driveway that will intersect the west side of Lower Broadway opposite Mystic Street and will be placed under traffic signal control. Secondary access for deliveries and employees will be provided by way of a driveway that will also intersect the west side of Lower Broadway north of the primary Project Site driveway. It is envisioned that the secondary driveway will also be placed under traffic signal control.

The Project will consist of a luxury hotel, gaming area, retail, dining, and conference/entertainment space with 2,909 structured parking spaces for employees and guests. In addition, extensive landscape and open space amenities are planned, including waterfront features, a harbor walk, and water transportation docking facilities. For a detailed description of the Project and the DEIR Program, see Chapter 2, Project Description.

4.1.2 STUDY METHODOLOGY

A transportation study was prepared in consultation with MassDOT, the MBTA, DCR, and Everett using available information from the cities of Boston, Chelsea, Medford, Revere, and Somerville, was performed following the guidelines of the EOEEA/MassDOT Guidelines for Environmental Impact Report/Environmental Impact Statement Traffic Impact Assessments (TIAs) with respect to data collection

methodologies and future horizon year condition development. This study, which was conducted in three distinct stages, was prepared using the standards of the traffic engineering and transportation planning professions.

The first stage involved an assessment of existing conditions in the study area and included an inventory of roadway geometrics, pedestrian and bicycle facilities, and public transportation services, observations of traffic flow, and collection of daily and peak period traffic counts.

In the second stage of the study, the framework for the development of future traffic conditions was established. Specific travel demand forecasts for the Project were assessed along with future traffic demands due to expected traffic growth independent of the Project. A ten-year time horizon was selected for analyses consistent with MassDOT guidelines for the preparation of Traffic Impact Assessments for Functional Design Reports (FDRs) and the anticipated build-out of the Project.

The third stage of the study quantifies the expected new trips generated as a result of the Project and presents the initial framework of the transportation improvement program for the Project with specific regard to Project access. The impacts of the Project were assessed with the Project's peak traffic, which typically occurs later than the roadway peak hour, added to the peak hour traffic of the roadway. For critical locations in the transportation network, the "real" impacts of the Project were also assessed, combining the peak hour traffic of the roadway with the actual amount of traffic that would be generated by the Project during that hour. Based on the trip generation characteristics of gaming facilities, the peak times selected were the Friday p.m. peak hour and the Saturday afternoon peak hour.

Measures that are designed to reduce the impact of the Project on the transportation system were also assessed. The assessment of these defined measures indicates that they will afford sufficient capacity to accommodate the additional traffic demands that may be associated within the Project in a safe and efficient manner.

4.1.3 STUDY AREA

Based on the trip distribution pattern for the Project and a review of both the local and regional transportation system, the following study area was selected for further review in conjunction with the transportation component of the DEIR. See Figure 4-2, Study Area Map.

1. Horizon Way/Broadway (Route 99), Everett;
2. Mystic Street/Bow Street, Everett;
3. Lynde Street/Broadway (Route 99), Everett;
4. Lynde Street/Bow Street, Everett;

5. Thorndike Street/Broadway (Route 99), Everett;
6. Thorndike Street/Bow Street, Everett;
7. Beacham Street/Broadway (Route 99), Everett;
8. Bowdoin Street/Broadway (Route 99), Everett;
9. Beacham Street/Robin Street, Everett;
10. Revere Beach Parkway (Route 16)/Santilli Highway/Mystic View Road/Route 99 Connector (aka Santilli Circle), Everett;
11. Revere Beach Parkway (Route 16)/Broadway (Route 99)/Main Street (aka Sweetser Circle), Everett;
12. Corey Street/2nd Street/Broadway (Route 99), Everett
13. Norwood Street/Chelsea Street/Broadway (Route 99), Everett;
14. Church Street/Mansfield Street/Broadway (Route 99), Everett;
15. Hancock Street/High Street/Broadway (Route 99), Everett;
16. Ferry Street/Broadway (Route 99), Everett;
17. Cameron Street/McKinley Street/Broadway (Route 99)/Lynn Street, Everett;
18. Tileston Street/Oakes Street/Main Street, Everett;
19. Waters Avenue/Linden Street/Main Street, Everett;
20. Peirce Avenue/Bellingham Avenue/Main Street, Everett;
21. Revere Beach Parkway (Route 16)/Garvey Street/2nd Street, Everett;
22. Revere Beach Parkway (Route 16)/Spring Street, Everett;
23. Revere Beach Parkway (Route 16)/South Ferry Street, Everett;
24. Revere Beach Parkway (Route 16)/Vine Street, Everett;
25. Revere Beach Parkway (Route 16)/Vale Street, Everett;
26. Revere Beach Parkway (Route 16)/Everett Avenue, Everett;
27. Chestnut Street/Williams Street, Chelsea;
28. Revere Beach Parkway (Route 16)/Union Street, Chelsea
29. Revere Beach Parkway (Route 16)/Washington Avenue, Chelsea;
30. Revere Beach Parkway (Route 16)/Webster Avenue, Chelsea;
31. Revere Beach Parkway (Route 16)/U.S. Route 1 Interchange, Chelsea/Revere;
32. Beach Street/Everett Street/Route 1A/Route 16/Route 60 (aka Bell Circle), Revere;
33. Fellsway West (Route 28)/Fulton Street, Medford;
34. Fellsway West (Route 28)/Salem Street (Route 60), Medford;
35. Central Avenue/Medford Street/Fellsway (Route 28), Medford;
36. Riverside Avenue/Fellsway (Route 28), Medford;
37. I-93 Southbound Off-ramp/Mystic Valley Parkway (Route 16) Southbound Connector, Medford;
38. Harvard Street/Mystic Avenue (Route 38), Medford;
39. Harvard Street/Mystic Valley Parkway (Route 16)/Mystic Valley Parkway (Route 16) Southbound Connector, Medford;
40. Mystic Valley Parkway (Route 16)/Locust Street, Medford;
41. Mystic Valley Parkway (Route 16)/Commercial Street, Medford;
42. Mystic Valley/Revere Beach Parkway (Route 16)/Fellsway (Route 28)/Middlesex Avenue (aka Wellington Circle), Medford;
43. Revere Beach Parkway (Route 16) Eastbound Ramps to Rivers Edge Drive, Medford;
44. Revere Beach Parkway (Route 16) Westbound Ramps to Rivers Edge Drive, Medford;
45. I-93 Southbound Off-ramp/I-93 Northbound On-ramp/Mystic Avenue (Route 38), Somerville;

46. I-93 Northbound Off-ramp/McGrath Highway (Route 28), Somerville;
47. Mystic Avenue (Route 38)/McGrath Highway (Route 28), Somerville;
48. Mystic Avenue (Route 38)/I-93 Southbound On-ramp Diverge, Somerville;
49. Broadway/McGrath Highway (Route 28), Somerville;
50. Mystic Avenue (Route 38)/I-93 Northbound On-ramp Diverge, Somerville;
51. Dexter Street/Alford Street (Route 99), Boston;
52. Cambridge Street/I-93 Northbound Off-ramp, Boston;
53. Main Street/Maffa Way/Cambridge Street/Alford Street (aka Sullivan Square), Boston;
54. Austin Street/New Rutherford Avenue (Route 99), Boston;
55. New Rutherford Avenue (Route 99)/Route 1 Ramps, Boston;
56. New Rutherford Avenue (Route 99)/Chelsea Street (aka City Square), Boston; and
57. Monsignor O'Brien Highway (Route 28)/Edwin H. Land Boulevard/Charlestown Avenue, Cambridge.

4.2 EXISTING TRANSPORTATION CONDITIONS

4.2.1 METHODOLOGY

At gaming facilities, trip activity varies by month, day of week, and time of day. Based on available gaming data, visitation is typically highest on Fridays and Saturdays. After a review of hourly trip activity patterns at similar gaming facilities (discussed in more detail in Section 4.4.2), it is estimated that the Project's peak periods of travel activity will occur on a Friday and Saturday after 7:00 p.m. and will not overlap with the typical commuter peak hours. In order to be conservative, and, at the request of MassDOT, this report analyzes the highest combination of Project and roadway traffic by adding the the Project's peak traffic to the peak roadway traffic, which is expected to occur on Fridays between 4:00 – 6:00 p.m. and Saturdays between 2:00 – 5:00 p.m. At key locations, this report also assesses the "real" peak hour traffic, that is, the combination of the roadway peak hour with the amount of traffic that would actually be generated by the Project during that hour.

A comprehensive field inventory of existing conditions near the Project Site was conducted in in June, July, and August 2013. The field investigation consisted of an inventory of existing roadway geometrics, pedestrian and bicycle facilities, public transportation services, and operating characteristics as well as posted speed limits and land use information within the study area. Queue observations were completed at the major intersections and selected signalized intersections to calibrate the traffic models.

4.2.2 EXISTING TRAFFIC VOLUMES

In order to establish existing traffic volumes within the study area, manual turning movement counts were conducted on dates in the months of May, June, July, and August 2013. The count dates for each location are summarized in Table 4-1, shown below.

Table 4-1, Summary of TrafficCounting Program

Intersection Number[1]	Friday Count Dates	Saturday Count Dates
1-9, 11-13, 51	05/17/2013	06/08/2013
10	05/31/2013	06/01/2013
14-20	06/21/2013	06/22/2013
21-26, 28-31	06/14/2013	06/15/2013
27	08/02/2013	08/03/2013
33-36, 41, 46-48, 50	07/26/2013	07/27/2013
37-40, 42	05/31/2013	06/01/2013
43-45, 49	08/02/2013	08/03/2013
52, 53	05/17/2013	05/18/2013
54-57	06/07/2013	06/08/2013

1) See intersection list, pages 4-2 – 4-4for corresponding locations.

The peak hours selected for the entire study area are Friday 4:30 – 5:30 p.m. and Saturday 2:45 – 3:45 p.m. Although the peak hours vary slightly from intersection to intersection over the whole study area, these peaks were chosen based on the intersections closest to the Project Site. The same peak hours were used for all intersections for continuity. These days of the week and time periods were selected for analysis purposes as they are representative of the projected peak patron and traffic volume periods for the Project. The traffic volume data were not adjusted to average-month conditions. A review of the data at MassDOT permanent count stations in the area indicated that the months in which the counts were taken are all higher than the average month. To represent a conservative analysis, they were not adjusted down. The traffic count data are included in Appendix B.

Figure 4-3A and Figure 4-3B depict the existing (2013) Friday p.m. peak hour traffic volumes at intersections 1-17 and 18-26, respectively, located in Everett. Figure 4-4 shows the existing (2013) Friday p.m. peak hour traffic volumes at intersections 27-32, located in Chelsea and Revere. Figure 4-5 shows the existing (2013) Friday p.m. peak hour traffic volumes at intersections 33-44, located in Medford. Figure 4-6 shows the existing (2013) Friday p.m. peak hour traffic volumes at intersections 45-57, located in Somerville, Boston, and Cambridge. Figure 4-7A and Figure 4-7B depict the existing (2013) Saturday p.m. peak hour traffic volumes at intersections 1-17 and 18-26, respectively, located in Everett. Figure 4-8 shows the existing (2013) Saturday p.m. peak hour traffic volumes at intersections 27-32, located in Chelsea and Revere. Figure 4-9 shows the existing (2013) Saturday p.m. peak hour traffic volumes at intersections 33-44, located in Medford. Figure 4-10 shows the existing (2013) Saturday p.m. peak hour traffic volumes at intersections 45-57, located in Somerville, Boston, and Cambridge. Table 4-2 provides a summary of 2013 existing traffic volumes on the surrounding regional roadways.

Table 4-2, 2013 Traffic Volumes

Roadway	Weekday		Saturday	
	Average Daily (vehicles/day)	p.m. Peak (vehicles/hour)	Saturday (vehicles/day)	Afternoon Peak (vehicles/hour)
Broadway (Route 99), Everett near Project Site[1)]	43,400	2,670	41,900	2,520
Broadway (Route 99), Everett north of Sweetser Circle[2)]	15,500	930	15,200	910
Route 16, Medford west of Santilli Circle[2)]	96,700	5,800	80,500	4,830
Route 16, Everett east of Sweetser Circle[2)]	81,500	4,890	73,700	4,420
Main Street, Everett north of Sweetser Circle[2)]	17,700	1,060	16,300	980
Rutherford Avenue, Boston South of Sullivan Square[2)]	54,200	3,250	20,000	1,200

[1)] Daily and peak hour volumes from counts.

[2)]Daily volumes estimated from peakhour traffic data and peak hour k-factor of 0.06. Peak hour volumes from counts

4.2.3 EXISTING ROADWAY CONDITIONS

Roadway conditions within the study area are described below.

Route 16 follows a southwest-northeast trajectory through Massachusetts, running from Route 12 and Route 193 in Webster to Route 1A and Route 60 (Bell Circle) in Revere. Route 16 begins as a single lane urban principal arterial in Webster. Within Greater Boston, the highway becomes a three-lane principal arterial between Cambridge and Revere; however, a 1.5-mile section of the roadway operates as an urban principal arterial in Medford from Route 2A to Route 38. Within the study area, Route 16 is a four- to six-lane principal arterial running east to west. Locally, Route 16 provides four lanes to the west of the intersection of Route 16/Route 28, known as Wellington Circle; this section is named Mystic Valley Parkway. To the east of Wellington Circle, Route 16 provides six lanes and is called Revere Beach Parkway. Route 16 lies less than ¼ mile north of the site.

Route 28 is a 152-mile state highway that follows a south-north trajectory through Massachusetts, running from U.S. Route 6 and Route 6A (Orleans Rotary) in the southern terminus to Methuen at its northern terminus, continuing into New Hampshire. North of Wellington Circle, Route 28 is a six-lane urban minor arterial known as The Fellsway and Fellsway West. South of Wellington Circle through Medford, Somerville, and Cambridge, the highway is primarily a four-lane urban principal arterial called McGrath Highway. Route 28 lies approximately one mile northwest of the site.

Route 38 is a 27-mile state highway that follows a southeast-northwest trajectory in Massachusetts. The highway begins at Route 99 at Sullivan Square in Boston and continues to Dracut at its northern terminus, continuing into New Hampshire. Within the vicinity of the site, Route 38 operates as a two-lane urban collector, traveling parallel to I-93 between Sullivan Square and Route 16 in Medford; this section of Route 38 is named Mystic Avenue. Locally, Route 38 lies ¾-mile northwest of the site and follows a southeast-northwest trajectory.

Route 99 is a 6.5-mile state highway that follows a south-north trajectory, running from Chelsea Street in Boston to U.S. Route 1 in Saugus. In Boston, Route 99 is a four-lane divided highway, operating as urban minor arterial between Chelsea Street (City Square) to 3/4-mile north of Sullivan Square; this section of the roadway is called New Rutherford Avenue. Thereafter, in Everett and Malden, Route 99 is a two-lane urban minor arterial called Broadway. Route 99 lies to the east of the site and provides direct access to it. There are sidewalks along the entire Broadway corridor.

Route 60 is a 14-mile state highway which follows an east-west trajectory in Massachusetts, running from Route 20 in Waltham and terminating at Route 1A/Route 16 (Bell Circle) in Revere. Locally, Route 60 is a two-lane urban minor arterial through Medford and Malden; however, throughout Revere, Route 60 is a four-lane urban principal arterial called Squire Road/American Legion Highway. Route 60 lies 1.5 miles to the north of the site.

Main Street is a 9-mile, two-lane urban minor arterial which follows a south-north trajectory beginning at Route 16 and Route 99 (Sweetser Circle) in Everett and terminating at Forrester Road/Lowell Street, south of the Reading-Wakefield Rotary at I-95/Route 128. Main Street connects the town centers of Malden, Melrose, Stoneham, and Wakefield. Main Street is located ½ mile north of the project site, originating at Sweetser Circle.

4.2.4 EXISTING ROADWAY OPERATIONS

The criterion for evaluating roadway traffic operations is level of service (LOS). The measure of effectiveness for multi-lane roadway segments is density, measured in passenger cars per hour per lane (pcphpl). Each range of density is assigned an LOS letter grade. Table 4-3 shows the density ranges for each LOS.

Table 4-3, Multi-lane Roadway Level of Service Criteria

Level of Service (LOS)	Maximum Density (pcphpl)
A	□11
B	>11 and □18
C	>18 and □26
D	>26 and □35
E	>35 and □45
F	>45

Source: *Highway Capacity Manual*, Transportation Research Board, 2010.
*Values shown are based on a 45 mph speed limit

Table 4-4 shows the results of the roadway segment capacity analysis for several segments of Broadway (Route 99) near the Project Site and for several segments of Route 16 in Everett and Medford.

Table 4-4, Existing (2013) Conditions Roadway Segment Capacity Analysis Summary

Roadway Segments	Weekday						Saturday					
	Volume (vph)	Density (pcphpl)	LOS	Volume (vph)	Density (pcphpl)	LOS	Volume (vph)	Density (pcphpl)	LOS	Volume (vph)	Density (pcphpl)	LOS
	Northbound			Southbound			Northbound			Southbound		
Broadway (Route 99), Everett north of Bowdoin Street	1148	14.5	B	1045	13.2	B	1005	12.7	B	1067	13.5	B
Broadway (Route 99), Everett south of Project Site	1288	16.3	B	1123	14.2	B	1009	12.8	B	1128	14.3	B
	Eastbound			Westbound			Eastbound			Westbound		
Route 16, Medford west of Santilli Circle	2897	24.4	C	2566	21.6	C	2150	18.1	C	2341	19.7	C
Route 16, Everett east of Sweetser Circle	2507	21.1	C	2823	23.8	C	1910	16.1	B	2566	21.6	C
Route 16, Everett west of Locust Street	2065	26.1	D	1372	11.6	B	1665	21.1	C	1423	12.0	B

4.2.5 EXISTING INTERSECTION CONDITIONS

The following section describes intersection conditions at the study area intersections. Intersection numbers correspond to the numbers in the list of study area intersections and are applied consistently throughout this Chapter 4.

EVERETT

1. ***Horizon Way/Broadway (Route 99)*** is an unsignalized intersection that has three approaches. The Horizon Way eastbound approach is a commercial access road that consists of two lanes, a left-turn lane, and a right-turn lane. The Horizon Way approach does not have traffic control signage, although it operates as a stop-controlled approach. Broadway (Route 99) northbound has two travel lanes: a shared left-turn/through lane and a through lane. Broadway (Route 99) southbound has two travel lanes, a through lane and a shared through/right-turn lane. Broadway (Route 99) is free-flowing. There are 5-foot bicycle lanes on both sides of Broadway (Route 99).

   A bus stop is located on the near side of the Broadway (Route 99) southbound approach. Sidewalks are provided along all approaches of the intersection and range from 5.5 – 7.5 feet wide. A 10-foot crosswalk is provided across Horizon Way.

2. ***Mystic Street/Bow Street*** is a three-legged unsignalized intersection that has one approach. The Mystic Street east leg is one-way leaving the intersection. The Bow Street northbound approach consists of a shared through/right-turn lane. Bow Street is a free-flowing, one-way street.

   Sidewalks are provided along all approaches of the intersection and range from 6 – 8.5 feet wide. There are 10-foot crosswalks that are provided on the east side of Bow Street and the north side of Mystic Street.

3. ***Lynde Street/Broadway (Route 99)*** is a three-legged unsignalized intersection that has two approaches. The intersection is adjacent to the Lynde Street/Bow Street intersection. Broadway (Route 99) northbound has two travel lanes, a through lane and a through lane. Broadway (Route 99) southbound has two travel lanes, a shared left-turn/through lane, and a through lane. There are 5-foot bicycle lanes on both Broadway northbound and southbound approaches. Broadway (Route 99) is free-flowing.

   Sidewalks are provided along all approaches of the intersection and range from 5.5 – 6 feet wide. There is a 10-foot crosswalk across Lynde Street.

4. ***Lynde Street/Bow Street*** is four-legged unsignalized intersection that has two approaches. The intersection is located just east of the Lynde Street/Broadway intersection. The Lynde Street eastbound approach consists of a shared left-turn/through lane. Bow Street operates as a free-flowing, one-way street. The Bow Street northbound approach consists of a shared through/right-turn lane. The Lynde Street eastbound approach does not have traffic control signage, although it operates as a stop-controlled approach.

   Sidewalks are provided along all approaches of the intersection and range from 5 – 9.5 feet wide. Crosswalks are provided across Lynde Street and the northbound approach of Bow Street. The crosswalks range from 9–10.5 feet wide.

5. ***Thorndike Street/Broadway (Route 99)*** is a three-legged unsignalized intersection that has two approaches. The intersection is located just west of the Thorndike Street/Bow Street intersection. Broadway (Route 99) northbound has two travel lanes, a through lane and a shared through/right-turn lane. Broadway (Route 99) southbound has two travel lanes, a shared left-turn/through lane, and a through lane. There are 5-foot bicycle lanes on both Broadway (Route 99) northbound and southbound approaches. Broadway (Route 99) is free-flowing.

   Sidewalks are provided along all approaches of the intersection and range from 5.5–9 feet wide. A crosswalk is provided across Thorndike Street.

6. ***Thorndike Street/Bow Street*** is a four-legged unsignalized intersection that has two approaches. The intersection is located just east of the Thorndike Street/Broadway (Route 99) intersection. The Thorndike Street eastbound approach consists of a shared left-turn/through lane. The Bow Street northbound approach consists of a shared through/right-turn lane. Bow Street and Thorndike Street are both stop-controlled.

   Sidewalks are provided along all approaches of the intersection and range from 4.5–10 feet wide, averaging 7-feet wide. A 6-foot crosswalk is provided on the north side of the intersection; a 10-foot crosswalk is provided on the south side of the intersection.

7. ***Beacham Street/Broadway (Route 99)*** is a signalized intersection that has four approaches. The McDonald's driveway eastbound approach consists of a shared left-turn/through lane and a right-turn lane. The Beacham Street westbound approach has a shared left-turn/through/right-turn lane. The Broadway (Route 99) northbound approach consists of two lanes, a shared left-turn/through lane, and shared through/right-turn lane. The Broadway

(Route 99) southbound approach consists of two lanes, a shared left-turn/through lane, and a shared through/right-turn lane. There are 5-foot bicycle lanes on both Broadway (Route 99) northbound and southbound approaches.

A bus stop is located on the near side of the Broadway (Route 99) southbound approach. Sidewalks are provided along all approaches of the intersection and range from 5–8 feet wide. There are 10-foot crosswalks that are provided on all legs of the intersection.

8. ***Bowdoin Street/Broadway (Route 99)*** is a signalized intersection that has three approaches. The Bowdoin Street eastbound approach has a shared left-turn/right-turn lane. The Broadway (Route 99) northbound approach consists of a shared left-turn/through lane, a through lane, and a 5-foot bicycle lane. The Broadway (Route 99) northbound bike lane ends at the intersection. The Broadway (Route 99) southbound approach consists of a through lane, a shared through/right-turn lane, and a 5-foot bicycle lane.

   There is a bus stop located on the near side of the Broadway (Route 99) southbound approach. Sidewalks are provided along all approaches of the intersection, with the exception of the south side of Bowdoin Street, and range from 5–8 feet wide. There are 10-foot crosswalks, which are provided on the Bowdoin Street eastbound and Broadway (Route 99) southbound approaches.

9. ***Beacham Street/Robin Street*** is an unsignalized intersection that has four approaches. The Beacham Street eastbound and westbound approaches both have a shared left/through/right lane. The Robin Street northbound approach has a shared left-turn/through/right-turn lane. The driveway southbound approach consists of a left-turn lane and a shared through/right-turn lane. Beacham Street is free-flowing, while Robin Street and the driveway are stop-controlled.

   A 6-foot sidewalk is provided on the northern side of Beacham Street. There are 5-foot and 6.5-foot sidewalks provided on the east and west sides of Robin Street, respectively. Crosswalks are not provided in this area.

10. ***Revere Beach Parkway (Route 16)/Santilli Highway/Mystic View Road/Route 99 Connector (aka Santilli Circle)*** is a signalized 500-foot diameter traffic rotary with five approaches. Revere Beach Parkway (Route 16) bisects the traffic circle; five intersections compose the signalized traffic rotary. The circulating width of the rotary varies between 24 – 36 feet. For the purposes of analysis, Santilli Circle consists of two signalized intersections along with

four weaving sections.

The eastern intersection at Santilli Circle is a four-legged signalized intersection with three approaches. The Revere Beach Parkway (Route 16) eastbound approach consists of three through lanes. The Revere Beach Parkway (Route 16) westbound approach consists of twothrough lanes and a shared through/right-turn lane. A raised median separates the Revere Beach Parkway (Route 16) eastbound and westbound directions of travel. The Santilli Circle northbound approach consists of three through lanes. No sidewalks or crosswalks are provided at the intersection.

The western intersection at Santilli Circle is a four-legged signalized intersection with three approaches. The Revere Beach Parkway (Route 16) eastbound approach consists of three through lanes and a right-turn lane. The Revere Beach Parkway (Route 16) westbound approach consists of three through lanes. A raised median separates the Revere Beach Parkway (Route 16) eastbound and westbound directions of travel. The Santilli Circle southbound approach consists of two through lanes. At the western intersection, sidewalks are provided along the Revere Beach Parkway (Route 16) eastbound approach and are typically 5-6 feet in width. A crosswalk is provided across the Revere Beach Parkway (Route 16) eastbound approach.

The northern weaving section is located at the intersection of Santilli Highway and Santilli Circle. The Santilli Circle westbound approach consists of a through lane and a shared through/right-turn lane. The Santilli Highway southbound approach provides one travel lane. Sidewalks are provided along the east side of the Santilli Highway southbound approach. A crosswalk is provided across the Santilli Highway southbound approach.

The northeastern weaving section is located at the intersection of Santilli Circle and Revere Beach Parkway (Route 16). The Santilli Circle northwestbound approach consists of two through lanes and one right-turn lane. The Revere Beach Parkway (Route 16) southwest-bound approach consists of a single 16-foot travel lane. The departure lane to Revere Beach Parkway (Route 16) northeast-bound consists of a single lane that operates as two travel lanes. A 6-foot sidewalk is provided along the north side of the Revere Beach Parkway (Route 16) southwest-bound approach. Crosswalks are not provided.

The southeastern weaving section is located at the divergence point between Santilli Circle and Revere Beach Parkway (Route 16) eastbound. The Santilli Circle southeast-bound approach consists of four lanes, including two

through lanes to continue on Santilli Circle, one shared through/right-turn lane, and one dedicated right-turn lane to continue to Revere Beach Parkway (Route 16) eastbound. The Revere Beach Parkway (Route 16) eastbound departure consists of two lanes. No sidewalks or crosswalks are provided at this intersection.

The southwestern weaving section of Santilli Circle is located at the intersection of Santilli Circle and Mystic View Road. The Santilli Circle eastbound approach consists of one through lane and one shared through/right-turn lane. The Mystic View Road northbound approach consists of two travel lanes which merge onto Santilli Circle at the southeastern weaving section. The left lane on Mystic View Road northbound may continue onto Santilli Circle; however, the right lane is channelized toward Route 16 eastbound. The Mystic View Road southbound departure consists of one exit lane. Sidewalks are provided on the west side of Mystic View Road. Crosswalks are not provided in this area.

11. ***Revere Beach Parkway (Route 16)/Broadway (Route 99)/Main Street (aka Sweetser Circle)*** is 350-foot diameter rotary that consists of five legs and four approaches. The Revere Beach Parkway (Route 16) eastbound approach consists of a single widetravel lane. The departure lane to Revere Beach Parkway (Route 16) westbound is 22 feet wide. The Broadway (Route 99) westbound approach consists of a single wide travel lane. The departure lane to Broadway (Route 99) eastbound is 26 feet wide. The Broadway(Route 99) northbound approach consists of a single wide travel lane. The departure to Broadway (Route 99) southbound consists of a single 44-foot travel lane. The Main Street southbound approach consists of a single wide travel lane, and the departure to Main Street northbound consists of a single 30-foot travel lane. The departure to Revere Beach Parkway (Route 16) northeast-bound is 30 feet wide. The circulating width of the rotary is approximately 40-50 feet wide. Sidewalks are generally provided round the outside of the rotary. Crosswalks are provided across all legs of the rotary.

12. ***Corey Street/Second Street/Broadway (Route 99)*** is a signalized intersection that has four approaches. The Corey Street eastbound approach has a shared left-turn/through/right-turn lane. The Second Street westbound approach has a wide shared left-turn/through/right-turn lane. The Broadway (Route 99) northbound approach consists of a shared right-turn/through/right-turn lane and a parallel parking lane that may be used as a through/right-turn lane when parking is restricted. The Broadway (Route 99) southbound approach consists of shared left-turn/through/right-turn lane and a parallel parking lane that may be used as a through/right-turn lane when parking is restricted.

A bus stop is located on the near side of the Broadway (Route 99) southbound approach. Sidewalks are provided along all approaches of the intersection and range from 7–13 feet wide. There are 10-foot crosswalks that are provided on all legs of the intersection.

13. ***Norwood Street/Chelsea Street/Broadway (Route 99)*** is a signalized intersection that has four approaches. The Norwood Street eastbound approach consists of a left-turn lane, through lane, and right-turn lane. The Chelsea Street westbound approach consists of a left-turn lane and a right-turn lane. The Broadway (Route 99) northbound approach has a shared through/right-turn lane and a parallel parking lane. The Broadway (Route 99) southbound approach has a shared left-turn/through lane and a parallel parking lane.

    Signage on all approaches restricts vehicles from turning right on red. Sidewalks are provided along all approaches of the intersection and range from 5.5–16.5 feet wide, averaging 10 feet wide. There are 11-foot crosswalks provided on all legs of the intersection.

14. ***Church Street/Mansfield Street/Broadway (Route 99)*** is a four-legged signalized intersection that has three approaches. Church Street runs one-way westbound. The Mansfield Street westbound approach has a shared left-turn/through/right-turn lane and parallel parking from the curb on either side of the street. The Broadway (Route 99) northbound approach has a shared left-turn/through lane and parallel parking lane. The Broadway (Route 99) southbound approach has a shared through/right-turn lane and an 8-foot parallel parking lane.

    A bus stop is located on the near side of the Broadway (Route 99) northbound approach. Sidewalks are provided along all approaches of the intersection and range from 7–11 feet wide. There are 9-foot crosswalks provided on all legs of the intersection.

15. ***Hancock Street/High Street/Broadway (Route 99)*** is a four-legged signalized intersection that has three approaches. The Hancock Street eastbound approach has a shared left-turn/through/right-turn lane. High Street runs one-way eastbound. The Broadway (Route 99) northbound approach has shared left-turn/through/right-turn lane and a parallel parking lane. The Broadway (Route 99) southbound approach has a shared left-turn/through/right-turn lane and a parallel parking lane. High Street intersects with Broadway (Route 99) approximately 80 feet south of Hancock Street.

16.

Signage for the Hancock Street eastbound approach restricts vehicles from turning right on red. Bus stops are located on the near side of both the Broadway (Route 99) northbound and southbound approaches. Sidewalks are provided along all approaches of the intersection and range from 7.5–12 feet wide. There are 10-foot crosswalks that are provided on all legs of the intersection.

17. ***Ferry Street/Broadway (Route 99)*** is a signalized intersection that has four approaches. The Ferry Street eastbound approach consists of two lanes, a left-turn/through lane and a through/right-turn lane. The Ferry Street westbound approach consists of three lanes: a left-turn lane, and a through lane, a right-turn lane. A raised median separates the east-west directions of travel on the approaches of Ferry Street. The Broadway (Route 99) northbound approach consists of two lanes, a shared left-turn/through lane, and a right-turn lane. The Broadway (Route 99) southbound approach consists of one shared wide left-turn/through/right-turn lane.

Bus stops are located on the near sides of both the Broadway (Route 99) northbound and southbound approaches. Sidewalks are provided along all approaches of the intersection and range from 6–13 feet wide, averaging 9.5-feet wide. There are 10-foot crosswalks that are provided on all legs of the intersection.

18. **Cameron Street/McKinley Street/Broadway (Route 99)/Lynn Street** is a signalized intersection that has five approaches. The Cameron Street eastbound approach consists of a shared wide left-turn/bear-left-turn/through/right-turn lane. The McKinley Street westbound approach is a shared left-turn/right-turn/hard-right-turn lane. The Broadway (Route 99) northbound approach consists of two lanes, a through lane and a shared bear-right-turn/right-turn lane channelized by a painted island. A raised median separates the north-south direction of travel on the Broadway (Route 99) northbound approach. The Broadway (Route 99) southbound approach has a shared hard-left/left/through lane and a parallel parking lane. The Lynn Street southwest-bound approach is a shared left-turn/bear-left-turn/hard-right-turn lane.

Signage for the Cameron Street eastbound and Broadway (Route 99) northbound approaches restricts vehicles from turning right on red. Sidewalks are provided along all approaches of the intersection and range from 7–10 feet wide. There are 10-foot crosswalks that are provided along each leg of the intersection.

19. **Tileston Street/Oakes Street/Main Street** is a signalized intersection that has four approaches. The Tileston Street eastbound approach has a left-turn/right-turn lane. The Oakes Street westbound approach has a shared left-turn/through/right-turn lane and a parallel parking from the southern curb. Parallel parking is also permitted on the northern side of the street, although it is not striped. The Main Street northbound approach has a shared left-turn/through lane and a parallel parking from the curb. The Main Street southbound approach has a shared through/right-turn lane and a parallel parking from the curb.

Bus stops are located on the near sides of both the Main Street northbound and southbound approaches. Signage restricts vehicles from turning right on red. Sidewalks are provided along all approaches of the intersection and range from 4.5–10.5 feet wide. Crosswalks are provided along each leg of the intersection and are all at least 10 feet.

20. **Waters Avenue/Linden Street/Main Street** is a four-legged unsignalized intersection that has three approaches. The Waters Avenue eastbound approach has a wide shared left-turn/through/right-turn lane. Parking is permitted along the north side of the street, although it is not striped. The Linden Street westbound approach has a shared left-turn/through/right-turn lane. Parking is permitted along either side of the street, although it is not striped. The Main Street northbound approach has a shared left-turn/through lane and a parallel parking from the curb. The Main Street southbound approach has a shared through/right-turn lane and a parallel parking from the curb. Main Street is free-flowing, while Waters Avenue and Linden Street are stop-controlled.

Sidewalks are provided along all approaches of the intersection and range from 5–11 feet wide. Crosswalks are provided across the Main Street northbound and southbound legs of the intersection and are both at least 9 feet wide.

21. **Peirce Avenue/Bellingham Avenue/Main Street** is a signalized intersection that has four approaches. The Peirce Avenue eastbound approach has a shared left-turn/right-turn lane. Parking is permitted along the south side of Peirce Avenue, although it is not striped. The Bellingham Avenue westbound approach provides a shared left-turn/right-turn lane. Parking is permitted along either side of Bellingham Avenue, although it is not striped. The Main Street northbound approach has a through lane and a parallel parking lane. The Main Street southbound approach has a through lane and a parallel parking lane.

Bus stops are located on the both sides of the Main Street north leg. Sidewalks are provided along all approaches of the intersection and range from 4–10 feet wide. Crosswalks are provided along each leg of the intersection and are all at least 10 feet wide.

22. **Revere Beach Parkway (Route 16)/Garvey Street/2nd Street** is a five-legged signalized intersection that has four approaches. The Revere Beach Parkway (Route 16) eastbound approach consists of two through lanes and a shared through/right-turn lane. The Revere Beach Parkway (Route 16) westbound approach consists of two through lanes and a shared through/right-turn lane. A raised median separates the east-west directions of travel on Revere Beach Parkway (Route 16). The Garvey Street northeast-bound approach is a commercial access road that consists of one shared left-turn/through/right-turn lane. The Garvey Street northeast-bound approach does not have traffic control signage, although it operates as a stop-controlled approach. The 2nd Street northbound approach has a shared left-turn/through/right-turn lane. The 2nd Street southbound approach has a shared left-turn/through/right-turn lane.

Sidewalks are provided along all approaches of the intersection and range from 5–10 feet wide, averaging 8-feet wide. There are 9-foot crosswalks that are provided on the west side of 2nd Street and the north side of Revere Beach Parkway (Route 16).

23. **Revere Beach Parkway (Route 16)/Spring Street** is a signalized intersection that has four approaches. The Revere Beach Parkway (Route 16) eastbound approach consists of a left-turn lane, two through lanes, and a shared through/right-turn lane. The Revere Beach Parkway (Route 16) westbound approach consists of a left-turn lane, two through lanes, and a shared through/right-turn lane. A raised median separates the east-west direction of travel on Revere Beach Parkway(Route 16). The Spring Street northbound approach has a shared left-turn/through/right-turn lane. The Spring Street southbound approach has a shared left-turn/through/right-turn lane.

Sidewalks are provided along both sides of the southbound approach of Spring Street and the north side of Revere Beach Parkway (Route 16). Sidewalks are typically 6 feet wide, but range from 5–9.5 feet wide. Crosswalks are provided on all legs of the intersection and range from 8 to 9 feet wide.

24. **Revere Beach Parkway (Route 16)/South Ferry Street**is a four-legged signalized intersection that has four approaches. The Revere Beach Parkway (Route 16) eastbound approach consists of a shared U-turn/left-turn lane, two

through lanes, and a shared through/right-turn lane. The Revere Beach Parkway (Route 16) westbound approach consists of two through lanes and a shared 10-foot through/right-turn lane. A raised median separates the east-west direction of travel on Revere Beach Parkway (Route 16). A driveway intersects Revere Beach Parkway (Route 16) in the northbound direction, and vehicles exiting the driveway must turn right onto Revere Beach Parkway (Route 16) eastbound. The driveway's northbound approach does not have traffic control signage, although it operates as a stop-controlled approach.

Sidewalks are provided along all approaches of the intersection and range from 4.5–8 feet wide. Crosswalks and wheelchair ramps are not provided in the area.

25. **Revere Beach Parkway (Route 16)/Vine Street** is a signalized intersection that has four approaches. The Revere Beach Parkway (Route 16) eastbound approach consists of two through lanes and a shared through/right-turn lane. The Revere Beach Parkway (Route 16) westbound approach consists of a left-turn lane, two through lanes, and a shared through/right-turn lane. A raised median separates the east-west direction of travel on Revere Beach Parkway (Route 16). The Vine Street northbound approach has a shared left-turn/though/right-turn lane. The Vine Street southbound approach has a shared left-turn/through/right-turn lane.

Sidewalks are provided along all approaches of the intersection and range from 5.5–9.5 feet wide. Crosswalks are provided on all legs of the intersection and are all at least 9 feet wide.

26. **Revere Beach Parkway (Route 16)/Vale Street** is a signalized intersection that has three approaches. The Revere Beach Parkway (Route 16) eastbound approach consists of two through lanes and a shared through/right-turn lane. The Revere Beach Parkway (Route 16) westbound approach consists of a left-turn lane, two through lanes, and a shared through/right-turn lane. A raised median separates the east-west direction of travel on Revere Beach Parkway (Route 16). The Vale Street northbound approach has a shared 11-foot left-turn/through/right-turn approach.

Sidewalks are provided along all approaches of the intersection and are typically 6-feet wide, yet range from 4.5–9 feet wide. There are 8.5-foot crosswalks that are provided on the eastbound and northbound approaches.

27. **Revere Beach Parkway (Route 16)/Everett Avenue** is a signalized intersection that has four approaches. The Revere Beach Parkway (Route 16) eastbound approach consists of a left-turn lane, two through lanes, and a shared

through/right-turn lane. The Revere Beach Parkway (Route 16) westbound approach consists of a left-turn lane, two through lanes, and a shared through/right-turn lane. A raised median separates the east-west direction of travel on Revere Beach Parkway (Route 16). The Everett Avenue northbound approach consists of two lanes, a left-turn lane and a shared through/right-turn lane, which share a wide approach. The Everett Avenue southbound approach has a shared wide left-turn/through/right-turn lane. A painted median, which tapers down to a double yellow center line at the intersection, separates the north-south direction of travel on the Everett Avenue southbound approach.

Sidewalks are provided along all approaches of the intersection and are typically 7-feet wide, yet range from 5–9.5 feet wide. There are 9-foot crosswalks provided on northbound and southbound Everett Avenue approach; an 8-foot crosswalk is provided on the Revere Beach Parkway (Route 16) westbound approach.

CHELSEA

28. **Chestnut Street/Williams Street** is a four-legged signalized intersection that has three approaches. The Chestnut Street eastbound approach has a shared left-turn/through/right-turn lane. The Williams Street northbound approach has a shared through/right-turn lane. The Williams Street southbound approach has a shared left-turn/through lane.

Sidewalks are provided along all approaches of the intersection and are typically 9 feet wide, ranging from 8-19.5 feet wide. Crosswalks are provided on all legs of the intersection, ranging from 6.5-9.5 feet.

29. **Revere Beach Parkway (Route 16)/Union Street** is a signalized intersection that has three approaches. The Revere Beach Parkway(Route 16) eastbound approach consists of a shared left-turn/through lane, and two through lanes. The Revere Beach Parkway (Route 16) westbound approach consists of three through lanes, and a wide bear-right lane channelized by a raised island. The channelized bear-right lane is free-flowing. A raised median separates the east-west direction of travel on Revere Beach Parkway (Route 16). The Union Street southeast-bound approach has two left-turn lanes and a wide hard-right-turn lane turn channelized by a raised median.

Sidewalks are provided along all approaches of the intersection and are typically 5 feet wide along Route 16 and 7 feet wide along Union Street. There are 7–8-foot crosswalks provided across Union Street.

30. **Revere Beach Parkway (Route 16)/Washington Avenue** is a signalized intersection that has four approaches. The Revere Beach Parkway (Route 16) eastbound approach consists of a left-turn lane channelized by a painted rumble-strip, a through lane, and a shared through/right-turn lane. The Revere Beach Parkway (Route 16) westbound approach consists of a left-turn lane channelized by painted rumble-strip, two through lanes, and a shared through/right-turn lane. A raised median separates the east-west direction of travel on Revere Beach Parkway (Route 16). The Washington Avenue northbound approach consists of a shared left-turn/though/right-turn lane. The Washington Avenue southbound approach consists of a shared left-turn/through and a right-turn lane.

A bus stop is located on the near side of the Washington Avenue southbound approach. Signage for both the northbound and southbound Washington Avenue approaches restricts vehicles from turning right on red. Sidewalks are provided along all approaches of the intersection and are typically 6 feet wide. There are 8.5-foot crosswalks that are provided on legs of the intersection.

31. **Revere Beach Parkway (Route 16)/Webster Avenue** is a signalized intersection that has four approaches. Revere Beach Parkway (Route 16) eastbound consists of two through lanes and a shared through/right-turn lane. Revere Beach Parkway (Route 16) westbound consists of a left-turn lane, two through lanes, and a shared through/right-turn lane. A raised median separates the east-west direction of travel on Revere Beach Parkway (Route 16). The Webster Avenue northbound approach consists of an exclusive left-turn lane and a through/right-turn lane. The Webster Avenue northbound approach also has a wide signal-controlled channelized right-turn lane. The Webster Avenue southbound approach consists of an exclusive left-turn lane and a shared through/right-turn lane as well as a wide signal-controlled channelized right-turn lane.

Signage for the Webster Avenue northbound approach restricts vehicles from turning right on red. Sidewalks are provided along all approaches of the intersection, with the exception of the far side of the Revere Beach Parkway (Route 16) westbound approach, and range between 5.5–11 feet. There are 8-foot crosswalks that are provided on legs of the intersection.

REVERE

32. **Revere Beach Parkway (Route 16)/Route 1 Interchange** has two unsignalized intersections: the East and West.

The East Intersection is a three-legged intersection with two approaches. The Revere Beach Parkway (Route 16) eastbound approach consists of two through lanes, a shared through/right-turn lane which transitions into a wide channelized on-ramp (onto Route 1 northbound). The Route 1 northbound off-ramp approach consists of a wide channelized right-turn lane. Revere Beach Parkway (Route 16) eastbound maintains three lanes that allow through movements through the interchange.

Sidewalks and crosswalks are not provided along Revere Beach Parkway (Route 16) eastbound or the Route 1 ramps.

The West Intersection is a three-legged intersection with two approaches. The Revere Beach Parkway (Route 16) westbound approach consists of two through lanes and a right-turn lane which transitions into a wide channelized off-ramp (onto Route 1 southbound). The Route 1 southbound off-ramp has a wide channelized right-turn lane. After the intersection, the Route 1 off-ramp right-turn lane adds a third through lane onto Revere Beach Parkway (Route 16) westbound.

At the West Intersection, there are 5-foot sidewalks that are provided on the north side of Revere Beach Parkway (Route 16) westbound. Crosswalks are not provided in this area.

33. **Beach Street/Everett Street/Route 1A/Route 16/Route 60 (Bell Circle)** is a 225-foot diameter rotary. The rotary consists of six approaches, including the two locations where Route 1A bisects the rotary. The width of the circulating roadway is approximately 30 feet.

West of Bell Circle, Route 1A is also known as Beach Street and VFW Parkway. Route 60 is also known as American Legion Highway north of the rotary. Route 16 is known as Lee Burbank Highway south of Bell Circle.

Within Bell Circle, Route 1A northbound consists of two through lanes. Route 1A southbound also consists of two through lanes. A raised median separates the Route 1A northbound and southbound directions of travel. A 12-foot crosswalk is provided across Route 1A in the center of the rotary, providing a crossing towards the east, west, and southeast edges of the rotary.

The intersection of Beach Street westbound/Bell Circle is located on the east side of Bell Circle. It is a three-legged signalized intersection with two approaches. The Beach Street eastbound approach consists of a single channelized right-turn lane. The Bell Circle southbound approach consists of a single through lane which operates as two travel lanes for continued travel within Bell Circle, and a channelized right-turn lane onto Beach Street eastbound.

At the intersection of Beach Street westbound/Bell Circle, 9-foot sidewalks are provided along the Beach Street eastbound approach and the outer perimeter of Bell Circle southbound.. Crosswalks are provided across the Beach Street eastbound approach, the Bell Circle southbound channelized right-turn lane, and Bell Circle southbound (to and from the center of the rotary). Crosswalks range between 8 and 11 feet.

The intersection of Beach Street eastbound/Bell Circle is located on the west side of Bell Circle. It is a three-legged intersection with two approaches. The Beach Street westbound approach has two right-turn lanes. A raised island and striped median separate the east-west direction of travel on the eastbound and westbound approaches on Beach Street. The Bell Circle northbound approach consists of two through lanes and two right-turn lanes. Sidewalks are provided along Beach Street westbound, along the perimeter of the raised island on Beach Street, and the outer perimeter of Bell Circle southbound. Sidewalks are typically 6 feet. Crosswalks are provided across Beach Street and across Bell Circle southbound (to and from the center of the rotary) and are typically 10.5 feet wide.

The southern intersection at Bell Circle consists of the intersection of Route 1A and Bell Circle eastbound, a four-legged signalized intersection with three approaches. The Bell Circle eastbound approach consists of two through lanes and two right-turn lanes channelized by a raised island. The Route 1A northbound approach consists of two through lanes. The Route 1A southbound approach consists of two through lanes. A raised median separates the Route 1A northbound and southbound travel directions. Sidewalks are provided on the outside of the Bell Circle eastbound approach and continue onto the west side of Route 1A. Crosswalks are not provided in this area.

The intersection of Bell Circle westbound and Route 1A is located at the northern end of Bell Circle. It is a four-legged intersection that has three approaches. The Bell Circle westbound approach consists of two through lanes and channelized right-turn lane. The Route 1A northbound approach

consists of two through lanes. The Route 1A southbound approach consists of three through lanes. The Route 1A northbound and southbound directions are separated by a raised median with a guardrail. Sidewalks are provided along the Route 1A southbound approach. Crosswalks are not provided in this area.

The intersection of Bell Circle and Everett Street is located at the northeastern end of Bell Circle. The Bell Circle westbound approach consists of a single lane that acts as two through lanes and a right-turn lane. The Everett southeast-bound approach consists of a single right turn-lane. Sidewalks are provided along the Everett Street southeast-bound approach and the outer perimeter of Bell Circle westbound and are typically 7 feet. Crosswalks are not provided in the vicinity of Everett Street/Bell Circle

MEDFORD

34. **Fellsway West (Route 28)/Fulton Street** is a signalized intersection that has four approaches. The Fellsway West (Route 28) eastbound approach consists of a left-turn lane, two through lanes, and a shared through/right-turn lane. The Fellsway West (Route 28) westbound approach consists of a left-turn lane, a through lane, and a shared through/right-turn lane. A raised median separates the east and west directions of travel on Fellsway West(Route 28). The Fulton Street northbound approach has a shared left-turn/through/right-turn lane. The Fulton Street southbound approach has a shared left-turn/through/right-turn lane.

A bus stop is located on the near side of the Fellsway West (Route 28) eastbound approach and on the far side of the Fellsway West (Route 28) westbound departure. Signage for the Fulton Street northbound and southbound approaches and the Fellsway West (Route 28) westbound approach restricts vehicles from turning right on red. Sidewalks are provided along all approaches of the intersection and are typically 6 feet wide. Crosswalks are provided across both the Fulton Street northbound and southbound approaches and the Fellsway West (Route 28) eastbound approach, all of which are at least 10 feet wide.

35. ***Fellsway West (Route 28)/Salem Street (Route 60)*** is a signalized intersection that has four approaches. The Fellsway West (Route 28) eastbound consists of a left-turn lane, a through lane, and a shared through/right-turn lane. The Fellsway West (Route 28) westbound consists of a channelized left-turn lane, two through lanes, and a shared through/right-turn lane. A raised median separates the east and west directions of travel on Fellsway West (Route 28).

The Salem Street (Route 60) northbound approach consists of a shared left-turn/through lane and a shared through/right-turn lane. The Salem Street (Route 60) southbound approach consists of a shared left-turn/through lane, and a shared through/right-turn lane.

A bus stop is located on the near side of the Fellsway West (Route 28) westbound approach and on the far side of the Salem Street (Route 60) northbound approach. Signage for the Salem Street (Route 60) northbound and southbound approaches restricts vehicles from turning right on red. Sidewalks are provided along all approaches of the intersection and are typically 7 feet, but range from 4.5 – 9 feet. Crosswalks are provided on all legs of the intersection, ranging from 7.5 – 8.5 feet.

36. ***Central Avenue/Medford Street/Fellsway (Route 28)*** is a signalized intersection that has four approaches. The Central Avenue eastbound approach has a shared left-turn/through/right-turn lane. The Medford Street westbound approach consists of a left-turn lane and a shared through/right-turn approach. The Fellsway (Route 28) northbound approach consists of a channelized left-turn lane, two through lanes, and a shared through/right-turn lane. The Fellsway (Route 28) southbound approach consists of a channelized left-turn lane, two through lanes, and a shared through/right-turn lane. A median separates the north-south direction of travel on the northbound and southbound approaches of Fellsway (Route 28).
A bus stop is located on the near and far side of the Fellsway (Route 28) southbound approach. Sidewalks are provided along all approaches of the intersection and range from 4–8 feet. Crosswalks are provided on all legs of the intersection, ranging from 8.5–10 feet.

37. ***Riverside Avenue/Fellsway (Route 28)*** is a signalized intersection that has four approaches. The Riverside Avenue eastbound approach consists of a left-turn lane and a shared through/right-turn. The Riverside Avenue westbound approach has a shared left-turn/through/right-turn lane. The Fellsway (Route 28) northbound approach consists of a channelized left-turn lane, two through lanes, and a shared through/right-turn lane. The Fellsway (Route 28) southbound approach consists of a channelized left-turn lane, two through lanes, and a right-turn lane.

Bus stops are located on the near sides of both the Riverside Avenue eastbound and westbound approaches and the near side of the Fellsway (Route 28) northbound approach. Sidewalks are provided along all approaches of the intersection and range from 5 to 11 feet. There are 8-foot crosswalks that are provided on all legs of the intersection.

38. ***I-93 Southbound Off-ramp/Mystic Valley Parkway (Route 16) Southbound Connector*** is a merge of two roadways, which has two approaches. The Mystic Valley Parkway (Route 16) Southbound approach consists of two through lanes. The I-93 Off-ramp southwest-bound approach consists of a throughlane, which merges with the Mystic Valley Parkway (Route 16) Southbound Connector by adding a lane on the left. The Route 16 approach is free-flowing, while the I-93 Off-Ramp approach is yield-controlled. Sidewalks and crosswalks are not provided in this area.

39. ***Harvard Street/Mystic Avenue (Route 38)*** is a signalized intersection that has four approaches. The Harvard Street eastbound approach consists of a shared left-turn/through lane and a shared through/right-turn lane. The Harvard Street westbound approach consists of a left-turn lane, a through lane, and a right-turn lane. The Mystic Avenue (Route 38) northbound approach consists of a left-turn lane, two through lanes, and a channelized right-turn lane. The Mystic Avenue (Route 38) southbound approach consists of a left-turn lane, a through lane, and a through/right-turn lane.

A bus stop is located on the far side of the Mystic Avenue (Route 38) southbound approach. Sidewalks are provided along all approaches of the intersection, with the exception of the Mystic Avenue (Route 38) northbound approach, and are typically 6 feet wide. Crosswalks are provided on all legs of the intersection and are all at least 9 feet wide.

40. ***Harvard Street/Mystic Valley Parkway (Route 16)/Mystic Valley Parkway (Route 16) Southbound Connector*** is a signalized intersection that has three approaches. The Harvard Street eastbound approach consists of two through lanes. The Mystic Valley Parkway (Route 16) westbound approach consists of two through lanes. The Mystic Valley Parkway (Route 16) Southbound Connector approach consists of two left-turn lanes and a right-turn lane.

Signage for the Mystic Valley Parkway (Route 16) Southbound Connector approach restricts vehicles from turning right on red. Sidewalks are provided along the Harvard Street eastbound and Mystic Valley Parkway (Route 16) westbound approaches of the intersection and are typically 5.5 feet wide. Crosswalks are not provided in this area.

41. ***Mystic Valley Parkway (Route 16)/Locust Street*** was analyzed as two intersections: the northern intersection and the southern intersection.

The northern intersection is the intersection of Locust Street with the Mystic Valley Parkway (Route 16) westbound exit ramp and a commercial driveway. The driveway eastbound approach consists of a left-turn lane and a right-turn

lane. The Mystic Valley Parkway westbound approach consists of a left-turn lane and a through/right-turn lane. The Locust Street northbound approach consists of a shared left-turn/through lane and a through lane. The Locust Street southbound approach consists of a through lane, and a shared through/right-turn lane. The eastbound and westbound directions on the commercial driveway are separated by a raised median, and the Locust Street northbound and southbound directions are separated by a raised median south of the intersection. Sidewalks are provided along the east side of Locust Street and along the north side of the commercial driveway and Mystic Valley Parkway (Route 16). The sidewalks and are typically 5.5 feet, and range from 5 to 11.5 feet. Crosswalks are provided on the westbound and southbound approaches and are 11.5 feet and 9.5 feet, respectively.

The southern intersection is the intersection of Locust Street and the Mystic Valley Parkway (Route 16) mainline, which consists of three approaches. The Mystic Valley Parkway (Route 16) eastbound approach consists of two left-turn lanes and two through lanes. The Mystic Valley Parkway (Route 16) westbound approach consists of three through lanes. The Mystic Valley Parkway (Route 16) eastbound and westbound directions are separated by a raised median. The Locust Street southbound approach consists of a left-turn lane and two right-turn lanes. The Locust Street northbound and southbound directions are separated by a raised median. Sidewalks are provided along the east side of Locust Street, along the north side of Mystic Valley Parkway (Route 16) west of the intersection, and along the south side of Mystic Valley Parkway (Route 16). The sidewalks are typically 10 feet wide. Crosswalks are provided across Locust Street and the Mystic Valley Parkway (Route 16) westbound approach and are at least 9 feet.

42. ***Mystic Valley Parkway (Route 16)/Commercial Street*** is a signalized intersection that has three approaches. The Mystic Valley Parkway (Route 16) eastbound approach consists of a left-turn lane and three through lanes. The Mystic Valley Parkway (Route 16) westbound approach consists of a through lane and a through/right-turn lane. A raised median separates the east-west direction of travel on the eastbound and westbound approaches of Mystic Valley Parkway (Route 16). The Commercial Street southbound approach consists of a left-turn lane and a right-turn lane.

Sidewalks are provided along all approaches of the intersection are typically 5-6 feet. There are 8-foot crosswalks that are provided on the Commercial Street approach and the Mystic Valley Parkway (Route 16) westbound approach.

43. ***Mystic Valley/Revere Beach Parkway (Route 16)/Fellsway (Route 28)/Middlesex Avenue (Wellington Circle)*** is an oblong signalized rotary that varies between a 250-foot and 750-foot wide diameter with five approaches. Mystic Valley Parkway (Route 16) bisects the traffic circle; three intersections compose the rotary.

The eastern intersection is at Revere Beach Parkway/Mystic Valley Parkway (Route 16) and Fellsway (Route 28). It is a five-legged intersection with three approaches. The Mystic Valley Parkway (Route 16) eastbound approach consists of two channelized left-turn lanes and four through lanes. The Revere Beach Parkway (Route 16) westbound approach consists of five through lanes and a channelized right-turn lane. The three inside through lanes provide access to Fellsway (Route 28) southbound via the western intersection, while the outside two through lanes allow vehicles to continue onto Mystic Valley Parkway (Route 16) westbound. The Fellsway (Route 28) northbound approach consists of a left-turn lane, a left-turn/through lane, two through lanes, and a channelized right-turn lane, which widens to two lanes at the stop line. Sidewalks and/or paths are provided along all approaches of the intersection. Crosswalks are provided across the eastern leg of Revere Beach Parkway and across both the northern and southern legs of Fellsway (Route 28).

The western intersection is at Mystic Valley Parkway (Route 16), Fellsway (Route 28), and Middlesex Avenue. It is a seven-legged intersection that has four approaches. The Mystic Valley Parkway (Route 16) eastbound approach consists of five through lanes and a channelized right-turn lane. The two inside through lanes provide access to Fellsway northbound via the eastern intersection, and the three outside through lanes allow vehicles to continue to along Revere Beach Parkway (Route 16) eastbound. The Mystic Valley Parkway (Route 16) westbound approach consists of three channelized left-turn lanes and two through lanes. The Mystic Valley Parkway (Route 16) eastbound and westbound travel directions are separated by a landscaped median. The Fellsway (Route 28) southbound approach consists of two left-turn lanes, three through lanes, and a channelized right-turn lane. The Middlesex Avenue southwest-bound approach consists of two left-turn lanes ,a left-turn/bear-right lane, and a bear-right lane. Sidewalks and/or paths are provided along all approaches of the intersection. Crosswalks are provided across the western leg of Mystic Valley Parkway (Route 16), across both legs of Fellsway (Route 28), and across the Middlesex Avenue.

The northeastern intersection is the intersection of Middlesex Avenue and Fellsway (Route 28). The northeastern intersection lies approximately 200

feet north of the eastern intersection of Revere Beach Parkway/Mystic Valley Parkway (Route 16) and Fellsway (Route 28). The intersection is a four-legged intersection with two approaches. The Middlesex Avenue westbound approach consists of four through lanes and a channelized right-turn lane. The Fellsway (Route 28) northbound approach consists of three through lanes. Sidewalks and paths are provided along all approaches of the intersection. Crosswalks are provided across the northern leg of Fellsway (Route 28).

44. ***Revere Beach Parkway (Route 16) Eastbound Ramps to Rivers Edge Drive*** is an unsignalized merge/diverge from a limited access roadway. The Revere Beach Parkway (Route 16) eastbound approach consists of three through lanes and a channelized right-turn lane. The Revere Beach Parkway (Route 16) eastbound approach is free-flowing. The River's Edge ramp northbound approach consists of a channelized right-turn lane.

Sidewalks are provided along the south side of Revere Beach Parkway (Route 16) eastbound and are typically 3.5 feet wide. Crosswalks are not provided in this area.

45. ***Revere Beach Parkway (Route 16) Westbound Ramps to Rivers Edge Drive*** is an unsignalized merge/diverge from a limited access roadway. The Revere Beach Parkway(Route 16) westbound approach consists of three through lanes and a channelized right-turn lane. The River's Edge Ramp southbound approach consists of a channelized right-turn lane. The River's Edge ramp approach does not have traffic control signage, although it operates as a yield-controlled approach.

Sidewalks are provided along the north side of Revere Beach Parkway (Route 16) westbound and are typically 4 feet wide. Crosswalks are not provided in this area.

SOMERVILLE

46. ***I-93 Southbound Off-ramp/I-93 Northbound On-ramp/Mystic Avenue (Route 38)*** is a signalized intersection that has two approaches. The I-93 Southbound Off-Ramp westbound consists of a right-turn lane and a channelized right-turn lane, separated by a guardrail that divides the two lanes. The I-93 SB Off-ramp right-turn lane is controlled by a yield sign. The Mystic Avenue (Route 38) northbound approach consists of a two through lanes and a channelized right-turn lane. The Mystic Avenue (Route 38) northbound channelized right-turn lane is free flowing. The Mystic Avenue (Route 38) southbound approach consists of a left-turn lane and two through

lanes. A raised median separates the northbound and southbound approaches of Mystic Avenue (Route 38).

A bus stop is located on the near side of the Mystic Avenue (Route 38) northbound approach. Sidewalks are provided along the west side of Mystic Avenue (Route 38) and are typically 6 feet wide. Crosswalks are not provided in this area.

47. ***I-93 Northbound Off-ramp/McGrath Highway (Route 28)*** is a signalized intersection with three approaches. The I-93 NB Off-ramp westbound approach consists of two through lanes. The Fellsway (Route 28) southbound has two approaches which are divided by a raised median; the approach on east side directs traffic towards I-93 Southbound while the approach on the west side directs traffic towards McGrath Highway (Route 28). The Fellsway (Route 28) southbound approach to the east consists of three through lanes. The Fellsway (Route 28) southbound approach to the west also consists of three through lanes.

A 7-foot sidewalk is provided along the east side of Fellsway westbound; sidewalks along both sides of Fellsway continue after the intersection and are 7 – 8 feet. A 3-foot sidewalk is provided on the Route 93 NB Off-ramp. Crosswalks are provided across the I-93 NB Off-ramp westbound approach, the Fellsway (Route 28) southbound approach, and Bailey Road. Crosswalks all measure at least 9 feet wide.

48. ***Mystic Avenue (Route 38)/McGrath Highway (Route 28)***is a signalized intersection that is split into two intersections: east and west.

The west intersection has four legs, but only three approaches. The Mystic Avenue (Route 38) eastbound approach consists of a through lane, a shared through/right-turn lane, and a right-turn lane. The Mystic Avenue (Route 38) westbound approach consists of a shared through lane and a through lane. The McGrath Highway (Route 28) southbound approach consists of two through lanes and a shared left-turn/through lane.

Sidewalks for the west intersection are provided on the west side of McGrath Highway (Route 28), the south side of the Mystic Avenue (Route 38) eastbound approach, and on the median of the Mystic Avenue (Route 38) westbound approach. Sidewalks range from 6 to 8 feet. Crosswalks are provided across the Mystic Avenue (Route 38) eastbound and westbound approaches and through the center of the intersection along Mystic Avenue (Route 38). Crosswalks are typically 10-feet wide, and range from 7 to 10 feet.

The east intersection has four legs and consists of two approaches. The Mystic Avenue (Route 38) westbound approach consists of two through lanes. The McGrath Highway (Route 28) northbound approach consists of two left-turn lanes and a channelized right-turn lane.

Sidewalks for the east intersection are located on the east side of McGrath Highway (Route 28) northbound and the south side of the Mystic Avenue (Route 38) after the intersection. Sidewalks are typically 6 feet wide. A 10-foot crosswalk is provided across the Mystic Avenue (Route 38) eastbound approach; a 7-foot crosswalk is provided across the McGrath Highway (Route 28) northbound approach.

49. ***Mystic Avenue (Route 38)/I-93 Southbound On-ramp Diverge*** is a 4-legged unsignalized intersection with one approach. The single approach is at a one-way section of Mystic Avenue eastbound; the road diverges towards onto two legs with an additional right-turn into a commercial access road. The Mystic Avenue southbound approach consists of a through lane (onto I-93 southbound), through/bear-right lane, and a bear-right/right-turn lane. After the intersection, the I-93 SB On-Ramp consists of a through lane and the Mystic Avenue eastbound has a through lane.

Sidewalks are provided along the south side of Mystic Avenue and are typically 6 feet wide. Crosswalks are provided across the Mystic Avenue eastbound approach and across the southern commercial access road.

50. ***Broadway/McGrath Highway (Route 28)*** is a signalized intersection that has four approaches. The Broadway eastbound approach consists of a left-turn lane, a shared left-turn/through lane, two through lanes, and a right-turn lane. The Broadway westbound approach consists of a left-turn lane, a shared left-turn/through lane, a through lane, and achannelized right-turn lane. A raised median separates the east and west directions of travel on Broadway. The McGrath Highway (Route 28) northbound approach consists of a left-turn lane, two through lanes, and a shared through/right-turn lane. The McGrath Highway (Route 28) southbound approach consists of an 11.5-foot left-turn lane, two 11.5-foot through lanes, a shared 11.5-foot through/right-turn lane, and a 5-foot shoulder. A raised median separates the north-south direction of travel on the northbound and southbound approaches of McGrath Highway (Route 28).

Signage for the Broadway eastbound and southbound approaches restricts vehicles from turning right on red. Sidewalks are provided along all approaches of the intersection and are typically 9 feet wide and range from

5.5 to 30 feet. Crosswalks are provided across all legs of the intersection and are typically 8.5 feet.

51. ***Mystic Avenue (Route 38)/I-93 Northbound On-ramp*** is a four-legged intersection with one approach. The single approach is at a one-way section of Mystic Avenue northbound; the road diverges onto three legs that are channelized by raised medians. The Mystic Avenue eastbound approach consists of a single, wide travel lane. After the intersection, the I-93 NB On-Ramp has a single wide travel lane. The Mystic Avenue westbound approach consists of two travel lanes, and the Middlesex Avenue northbound approach consists of two travel lanes.

Sidewalks are provided along the north side of the Mystic Avenue eastbound approach and continue along the east side of Middlesex Avenue. Sidewalks range from 7.5 to 8 feet wide. Crosswalks are not provided in this area.

BOSTON

52. ***Dexter Street/Alford Street (Route 99)*** is a signalized intersection that has four approaches. The Boston Water and Sewer Commission (BWSC) driveway eastbound approach consists of a shared left-turn/through/right-turn lane. The Dexter Street westbound approach consists of a shared left-turn/through/right-turn lane. The Alford Street (Route 99) northbound approach consists of a shared left-turn/through lane and a through/right-turn lane. The Alford Street southbound approach consists of a shared left-turn/through lane and a shared through/right-turn lane.

A bus stop is located on the far side of the Alford Street (Route 99) southbound approach. Sidewalks are provided along all approaches of the intersection and are typically 6 feet wide. There are 10-foot crosswalks thatare provided on all legs of the intersection, with the exception of the Alford Street (Route 99) northbound approach.

53. ***Cambridge Street/I-93 Northbound Off-ramp*** is a signalized intersection that has three approaches. The Cambridge Street eastbound approach consists of two through lanes and a 5-foot bicycle lane. The Cambridge Street westbound approach consists of two through lane, one of which is shared with bicyclists. The I-93 NB Off-Ramp northbound consists of a left-turn lane and a channelized right-turn lane.

Signage on the I-93 NB ramp northbound approach restricts vehicles from turning right on red. Sidewalks are provided along all legs of the intersection. The sidewalks along Cambridge Street are typically 10 feet; the

sidewalks along the I-93 NB Off-ramp are typically 5 feet wide. Crosswalks are provided along the Cambridge Street eastbound approach and the I-93 NB Off-ramp northbound approach.

54. ***Main Street/Maffa Way/Cambridge Street/Alford Street (Sullivan Square)*** is a 4-legged intersection that has three approaches and borders the Sullivan Square traffic circle. The Maffa Way eastbound approach consists of three through lanes. The Cambridge Street northbound approach consists of two through lanes. The Alford Street southbound approach consists of two channelized left-turn lanes and two through lanes.

    Sidewalks are provided along all legs of the intersection with the exception of the curbs which border the center of the traffic circle, which include the east side of the Alford Street southbound approach. Sidewalks are typically 10-feet and range from 4.5-feet to 12-feet.

    Crosswalks are provided across the Maffa Way eastbound approach and the Cambridge Street northbound approach, and are all at least 10 feet.

55. ***Rutherford Avenue/Austin Street*** is a signalized intersection that has four approaches. The Austin Street eastbound approach consists of a shared left-turn/through lane, a through lane, and a right-turn lane channelized by a raised island. The Austin Street westbound approach consists of a shared left-turn/through lane and a shared through/right-turn lane. A raised median separates the east-west direction of travel on the eastbound and westbound approaches of Austin Street. The Rutherford Avenue northbound approach consists of a channelized U-turn lane, a shared left-turn lane, and a through/right-turn lane. The Rutherford Avenue southbound approach consists of a channelized U-turn lane, a shared left-turn/through lane, and two channelized right-turn lanes. A 95-foot median separates the north-south direction of travel on the northbound and southbound approaches of New Rutherford Avenue. Within the intersection are two lanes on Austin Street eastbound and two lanes on Austin Street westbound. All four lanes have a storage length of 70 feet.

    Signage for the Rutherford Avenue southbound approach and Austin Street westbound approaches restricts vehicles from turning right on red. Sidewalks are provided along all approaches of the intersection and are typically 9 feet wide. Crosswalks are provided across all legs of the intersection and range from 8 to 11.5 feet wide.

56. ***New Rutherford Avenue (Route 99)/Route 1 Ramps*** is a signalized intersection that has three approaches. The New Rutherford Avenue eastbound approach consists of four through lanes and a right-turn lane channelized by a raised median. The New Rutherford Avenue westbound approach consists of a left-turn lane, three through lanes, and a bear-right lane. A raised median separates the east and west directions of travel on New Rutherford Avenue. The Route 1 Off-ramp northbound consists of two left-turn lanes, and two right-turn lanes channelized by a raised island.

    Signage for the Route 1 Off-ramp northbound approach restricts vehicles from turning right on red. Sidewalks are provided along all approaches of the intersection and are typically 9 feet wide. A 10-foot crosswalk is provided across the New Rutherford Avenue eastbound approach.

57. ***New Rutherford Avenue (Route 99)/Chelsea Street (City Square)*** is a signalized intersection that has three approaches. The New Rutherford Avenue eastbound approach consists of a left-turn lane, three through lanes, and a right-turn lane channelized by a painted island. The New Rutherford Avenue westbound approach consists of three through-lanes and a right-lane channelized by a painted island. A raised median separates the east and west directions of travel on New Rutherford Avenue. The Chelsea Street southbound approach consists of a left-turn lane, a through lane, and a right-turn lane. A raised median separates the north and south directions of Chelsea Street.

    Sidewalks are provided along all approaches of the intersection and are typically 8 feet wide, and range from 5.5 to 15 feet. There are 9-foot crosswalks that are provided across all legs of the intersection with the exception of the New Rutherford Avenue eastbound approach and range from 8 to11.5 feet wide.

CAMBRIDGE

58. ***Monsignor O'Brien Highway (Route 28)/Edwin H Land Boulevard/Charlestown Avenue*** is a signalized intersection that has four approaches. The Monsignor O'Brien Highway (Route 28) eastbound approach consists of a left-turn lane, three through lanes, and a channelized right-turn lane. The Monsignor O'Brien Highway (Route 28) westbound approach consists of a left-turn lane, two through lanes, and a right-turn lane. The Edwin H. Land Boulevard northbound approach consists of a shared left-turn/through lane and a shared through/right-turn lane. The Charlestown Avenue southbound approach consists of a left-turn lane, two through lanes, and a right-turn lane.

Sidewalks are provided along all approaches of the intersection and are typically 8-feet wide, with the exception of the east side of the Edwin H. Land Boulevard northbound approach. Sidewalks are typically 9 feet wide, but range from 5.5 to 10 feet wide. Crosswalks are provided across both MonsignorO'Brien Highway (Route 28) approaches and across the Edwin H. Land Boulevard northbound approach.

4.2.6 EXISTING INTERSECTION OPERATIONS

The criterion for evaluating traffic operations is level of service (LOS), which is determined by assessing average delay incurred by vehicles at intersections and along intersection approaches. Trafficware's Synchro (version 8) software package was used to calculate average delay and associated LOS at the study area intersections. This software is based on the traffic operational analysis methodology of the Transportation Research Board's 2000 *Highway Capacity Manual (HCM).*

The volume-to-capacity (v/c) ratio is a measure of congestion at an intersection approach. A v/c ratio of one or greater indicates that the traffic volume on the intersection approach exceeds capacity.

The 50th percentile queue length, measured in feet, represents the average extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line during 50 percent of all signal cycles. The 50th percentile queue will be seen during most cycles. The queue would be this long about 50 percent of the time and would typically occur during off-peak hours.

The 95th percentile queue length, measured in feet, represents the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line during 5 percent of all signal cycles. The 95th percentile queue will not be seen during each cycle. The queue would be this long only 5 percent of the time and would typically not occur during off-peak hours.

LOS designations are based on average delay per vehicle for all vehicles entering an intersection. Table 4-5 displays the intersection level of service criteria. LOS A indicates the most favorable condition, with minimum traffic delay, while LOS F represents the worst condition, with significant traffic delay. LOS D or better is typically considered acceptable in an urban area. However, LOS E or F is often typical for a stop-controlled minor street that intersects a major roadway.

Table 4-5, Intersection Level of Service Criteria

Level of Service	Average Stopped Delay (seconds/vehicle)	
	Signalized Intersection	Unsignalized Intersection
A	≤10	≤10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

Source: *Highway Capacity Manual*, Transportation Research Board, 2010.

HSH performed capacity analysis on the study area intersections for the existing Friday p.m. and Saturday afternoon peak hours using the existing volumes, geometries, and control. Table 4-6 shows a summary of intersection LOS, delays, and average and 95th percentile queue lengths.

Table 4-6, Existing (2013) Conditions Intersection Capacity Analysis Summary

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
	LOS	Delay (sec/veh)	50% Queue Length	95% Queue Length	LOS	Delay (sec/veh)	50% Queue Length	95% Queue Length
1. (U) Horizon Way/ Broadway (Route 99)	-	-			-			
Horizon EB left | right	C	20.8	-	10	C	18.6	-	17
Broadway (Route 99) NB left	-	-	-	-	-	-	-	-
Broadway NB (Route 99) left/thru | thru	A	0.1	-	0	A	0.0	-	0
Broadway NB (Route 99) thru | thru | thru	-	-	-	-	-	-	-	-
Broadway (Route 99) SB thru | thru/right	A	0.0	-	0	A	0.0	-	0
2. (U) Mystic Street/Bow Street	-	-			-	-		
Bow NB thru/right	A	0.0	-	0	A	0.0	-	0
3. (U) Lynde Street/Broadway (Route 99)	-	-			-	-		
Broadway (Route 99) NB thru	A	0.0	-	0	A	0.0	-	0

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
| thru/right								
Broadway (Route 99) SB left/thru | thru	A	0.3	-	1	A	0.2	-	1
4. (U) Lynde Street/Bow Street	-	-			-	-		
Lynde EB left/thru	A	9.9	-	2	A	9.4	-	2
Bow NB thru/right	A	0.0	-	0	A	0.0	-	0
5. (U) Thorndike Street/Broadway (Route 99)	-	-			-	-		
Broadway (Route 99)NB thru | thru/right	A	0.0	-	0	A	0.0	-	0
Broadway (Route 99) SB left/thru | thru	A	0.6	-	3	A	0.2	-	1
6. (U) Thorndike Street/Bow Street	-	-			-	-		
Thorndike EB left/thru	B	10.1	-	6	A	9.7	-	2
Bow NB thru/right	A	0.0	-	0	A	0.0	-	0
7. (S) Beacham Street/Broadway (Route 99)	**F**	**104.7**			**C**	**24.6**		
McDonalds EB left/thru	C	33.2	23	49	C	25.3	19	64
McDonalds EB right	C	32.2	0	0	C	24.3	0	0
Beacham WB left/thru/right	F	127.5	~209	#375	D	42.5	107	#320
Broadway (Route 99) NB left/thru | thru/right	F	195.7	~448	#581	C	30.4	206	#496
Broadway (Route 99) SB left/thru | thru/right	B	17.1	149	#417	B	14.7	136	353
8. (S) Bowdoin Street/Broadway (Route 99)	**A**	**4.0**			**A**	**7.0**		
Bowdoin EB left/right	D	47.2	12	38	C	21.0	5	47
Broadway (Route 99) NB left/thru | thru	A	2.5	27	m25	A	6.6	68	277
Broadway (Route 99) SB thru | thru/right	A	4.5	77	294	A	6.7	78	306
9. (U) Beacham Street/Robin Street	-	-			-	-		
Beacham EB left/thru/right	A	0.0	-	0	A	0.0	-	0
Beacham WB left/thru/right	A	4.6	-	17	A	3.9	-	12
Robin NB left/thru/right	C	15.5	-	42	B	12.3	-	11
Driveway SB left/thru	E	44.2	-	5	D	27.5	-	2
Driveway SB right	B	12.1	-	1	B	11.5	-	1

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
10a. (S) Revere Beach Parkway (Route 16)/Santilli Highway/Mystic View Road/Route 99 Connector (aka Santilli Circle)– West Intersection	**A**	**7.9**			**D**	**45.3**		
Revere Beach Parkway (Route 16) EB thru | thru | thru	A	7.6	145	216	A	8.1	95	120
Revere Beach Parkway (Route 16) EB bear right (to Circle)	B	11.5	152	328	A	9.2	77	134
Revere Beach Parkway (Route 16) Route 16 WB thru | thru | thru	A	3.3	50	57	A	4.0	44	51
Rotary SB thru | thru/right	C	32.1	103	139	F	185.1	~356	#484
Rotary SB bear right	A	3.6	0	0	A	1.5	0	0
10b. (S) Revere Beach Parkway (Route 16)/Santilli Highway/Mystic View Road/Route 99 Connector (aka Santilli Circle) – East Intersection	**C**	**31.1**			**C**	**25.5**		
Revere Beach Parkway (Route 16) EB thru | thru | thru	A	4.7	56	63	A	4.4	38	45
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	A	9.9	188	230	A	9.5	170	209
Rotary NB thru | thru | thru	F	97.1	~284	#373	E	67.9	~255	#343
11. (U) Revere Beach Parkway (Route 16)/Broadway (Route 99)/Main Street (aka Sweetser Circle)	**-**	**-**			**-**	**-**		
Revere Beach Parkway (Route 16) Ramp EB	D	25.8	-	141	C	22.7	-	109
Broadway (Route 99) WB	F	58.7	-	256	D	31.0	-	162
Broadway (Route 99) NB	F	105.7	-	975	C	18.2	-	92
Main SB	B	12.0	-	61	B	12.6	-	66
12. (S) 2nd Street/Corey Street/Broadway (Route 99)	**D**	**37.4**			**C**	**27.9**		
Corey EB left/thru/right	D	49.0	87	112	D	36.8	27	64
2nd WB left/thru/right	D	54.9	169	#294	D	38.5	110	221
Broadway (Route 99) NB left/thru/right	C	33.4	263	#581	C	24.3	156	#430
Broadway (Route 99) SB left/thru/right	C	27.3	223	m#459	C	24.1	185	#509
13. (S) Norwood Street/Chelsea Street/Broadway (Route 99)	**D**	**37.3**			**C**	**28.4**		

Intersection	**Friday p.m. Peak Hour**				**Saturday Afternoon Peak Hour**			
Norwood EB left	D	38.0	57	101	C	29.7	28	76
Norwood EB thru	D	49.0	128	#218	C	34.5	63	142
Norwood EB right	D	38.1	50	93	C	30.9	36	93
Chelsea WB left	D	49.0	135	188	C	33.7	75	180
Chelsea WB right	D	41.1	84	129	C	29.2	37	102
Broadway (Route 99) NB thru/right	B	15.1	100	#524	C	24.0	145	#461
Broadway (Route 99) SB left/thru	D	50.6	309	#569	C	27.5	159	#514
14. (U) Mansfield Street/Church Street/Broadway (Route 99)	-	-			-	-		
Mansfield WB left/thru/right	C	19.5	-	28	C	17.0	-	20
Broadway (Route 99) NB left/thru	A	1.2	-	3	A	1.3	-	4
Broadway (Route 99) SB thru/right	A	0.0	-	0	A	0.0	-	0
15. (S) High Street/Hancock Street/Broadway (Route 99)	**C**	**21.8**			**B**	**17.3**		
Hancock EB left/thru/right	D	38.0	147	#357	C	22.7	31	#172
Broadway (Route 99) NB left/thru/right	C	21.5	204	317	C	20.9	112	399
Broadway (Route 99) SB left/thru/right	B	13.9	158	m158	B	12.3	92	308
16. (S) Ferry Street/Broadway (Route 99)	**E**	**78.9**			**C**	**27.9**		
Ferry EB left/thru | thru/right	C	34.6	145	#314	D	43.7	89	#243
Ferry WB left	C	21.3	30	75	C	21.2	44	126
Ferry WB thru	C	23.6	149	280	C	23.1	117	295
Ferry WB right	B	19.4	0	24	B	18.8	0	48
Broadway (Route 99) NB left/thru	F	187.9	~432	#710	C	22.8	117	#368
Broadway (Route 99) NB right	C	26.0	121	m200	B	14.6	27	93
Broadway (Route 99) SB left/thru	F	92.3	277	#519	C	32.1	161	#502
Broadway (Route 99) SB right	B	17.9	25	80	B	13.6	14	56
17. (S) McKinley Street/Cameron Street/Broadway (Route 99)/Lynn Street	**D**	**50.5**			**C**	**23.6**		
Cameron EB left/bear left/thru	D	40.7	26	55	C	27.0	1	7

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Cameron EB right	D	38.4	3	13	C	27.0	1	7
McKinley WB left/right/hard right	D	38.4	0	0	C	27.2	0	0
Broadway (Route 99) NB thru	C	20.7	142	#433	C	25.2	89	232
Broadway (Route 99) NB bear right/right	B	19.0	91	#285	C	24.7	71	195
Broadway (Route 99) SB hard left/left/thru	F	122.7	~301	#486	C	22.9	129	#425
Lynn SWB left/bear left/hard right	B	16.4	43	110	C	21.0	40	140
18. (S) Tileston Street/Oakes Street/Main Street	**B**	**18.9**			**B**	**14.0**		
Tileston EB left/thru/right	D	44.0	78	#282	C	24.2	53	#149
Oakes WB left/thru/right	B	17.6	37	99	B	17.8	35	80
Main NB left	A	7.5	3	21	A	7.4	3	23
Main NB thru	B	13.2	96	#375	B	10.9	77	271
Main SB thru/right	B	12.8	88	#323	B	12.4	95	#372
19. (U) Waters Avenue /Linden Street/Main Street	**D**	**0.76**			**C**	**0.72**		
Waters EB left	E	44.2	-	6	D	34.3	-	3
Waters EB right	B	11.5	-	4	B	11.9	-	5
Linden WB left/thru/right	F	116.7	-	214	F	140.2	-	214
Main NB left/thru	A	0.6	-	2	A	0.8	-	2
Main SB thru/right	A	0.0	-	0	A	0.0	-	0
20. (S) Peirce Avenue/Bellingham Avenue/Main Street	**B**	**17.1**			**B**	**15.5**		
Peirce EB left/thru/right	C	27.3	7	44	C	27.6	8	28
Bellingham WB left/thru/right	C	26.1	0	3	C	26.3	0	16
Main NB thru	B	17.5	176	261	B	14.2	128	202
Main SB thru	B	14.0	141	199	B	12.3	107	172
21. (S) Revere Beach Parkway (Route 16)/Garvey Street/2nd Street	**D**	**39.5**			**C**	**22.1**		
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	D	54.3	~1010	#1091	C	27.7	573	652
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	A	8.7	61	136	A	9.6	95	231
2nd NB left/thru/right	F	85.6	400	#630	D	51.8	313	402

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
2nd SB left/thru/right	C	33.6	112	152	C	27.1	65	110
22. (S) Revere Beach Parkway (Route 16)/Spring Street	**C**	**33.5**			**C**	**25.0**		
Revere Beach Parkway (Route 16) EB left	E	75.7	191	m193	E	71.1	144	m167
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	B	17.5	172	m#914	B	12.6	40	#632
Revere Beach Parkway (Route 16) WB left	E	63.9	96	m145	E	77.3	91	m149
Revere Beach Parkway (Route 16) thru | thru | thru/right	D	37.1	664	#890	B	17.8	43	#890
Spring NB left/thru/right	F	95.7	193	#348	F	83.4	128	#248
Spring SB left/thru/right	E	57.5	113	164	E	73.4	140	#216
23. (S) Revere Beach Parkway (Route 16)/South Ferry Street	**B**	**11.5**			**A**	**7.3**		
Revere Beach Parkway (Route 16) EB left	D	45.1	224	m461	E	57.7	241	m0
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	A	0.1	0	15	A	0.1	0	0
Revere Beach Parkway (Route 16) WB thru | thru| thru/right	B	16.3	319	1532	A	5.2	66	357
24. (S) Revere Beach Parkway (Route 16)/Vine Street	**D**	**38.0**			**C**	**26.3**		
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	C	28.4	398	#843	C	20.8	226	#273
Revere Beach Parkway (Route 16) WB left	E	70.9	25	m60	E	57.9	24	m50
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	C	21.7	102	698	C	20.8	402	522
Vine NB left/thru/right	F	152.0	~415	#624	E	70.2	162	#280
Vine SB left/thru/right	D	51.8	243	356	D	54.3	183	254
25. (S) Revere Beach Parkway (Route 16)/Vale Street	**C**	**21.0**			**B**	**10.5**		
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	B	15.2	225	m170	A	5.6	208	72
Revere Beach Parkway (Route 16) WB left	E	68.7	14	m19	E	58.7	26	m36
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	B	17.1	323	m152	A	8.7	132	m219
Vale NB left/thru/right	E	74.1	293	325	E	57.2	75	144
26. (S) Revere Beach Parkway (Route 16)/Everett Avenue	**D**	**43.2**			**D**	**44.7**		
Revere Beach Parkway (Route 16) EB left	F	112.1	232	#403	E	65.8	167	#263

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	C	24.2	265	#780	C	31.7	289	#562
Revere Beach Parkway (Route 16) WB left	E	63.0	65	109	D	43.8	74	138
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	D	42.2	250	#600	D	37.4	263	#592
Everett NB left	F	89.1	256	#441	F	142.3	~238	#353
Everett NB thru/right	D	48.3	338	464	D	48.3	224	293
Everett SB left	E	76.4	80	#186	E	62.3	57	#137
Everett SB thru/right	D	50.2	169	249	D	40.9	128	201
27. (S) William Street/Chestnut Street	**B**	**14.8**			**B**	**13.0**		
Chestnut EB left/thru/right	C	20.9	93	161	B	19.8	80	140
Williams NB thru/right	B	13.9	181	267	B	12.0	149	232
Williams SB left/thru	B	12.6	137	223	B	10.2	101	137
28. (S) Revere Beach Parkway (Route 16)/Union Street	**A**	**7.5**			**A**	**7.3**		
Revere Beach Parkway (Route 16) EB thru | thru | thru	A	7.1	52	477	A	7.5	69	375
Revere Beach Parkway (Route 16) WB thru | thru | thru	A	5.0	160	181	A	5.2	173	m138
Revere Beach Parkway (Route 16) WB bear right	B	14.3	17	m36	B	12.0	16	m19
Union SEB left | left	C	30.1	26	48	C	25.0	22	43
Union SEB hard right	C	28.7	0	11	C	23.9	0	10
29. (S) Revere Beach Parkway (Route 16)/Washington Street	**D**	**54.8**			**E**	**64.4**		
Revere Beach Parkway (Route 16) EB left	F	87.4	248	#416	F	115.4	~176	#332
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	E	63.6	409	#566	E	63.4	395	#564
Revere Beach Parkway (Route 16) WB left	F	83.5	110	m170	E	66.6	66	m87
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	D	45.6	450	m396	E	73.2	345	m#518
Washington NB left/thru/right	D	38.0	207	#522	C	29.7	152	#434
Washington SB left/thru	C	34.2	148	#339	C	27.3	107	#276
Washington SB right	C	32.2	96	212	C	25.9	68	170
30. (S) Revere Beach Parkway	**E**	**74.2**			**E**	**70.2**		

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
(Route 16)/Webster Avenue								
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	E	58.7	264	#889	D	40.0	219	#701
Revere Beach Parkway (Route 16) WB left	F	139.0	~339	#536	F	331.4	~362	#548
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	C	23.4	322	582	C	22.4	342	#744
Webster NB left**	F	116.8	~162	#314	F	164.2	~210	#390
Webster NB thru/right	D	52.5	407	540	D	42.8	245	354
Webster SB left**	F	583.7	~261	#420	F	215.5	~198	#340
Webster SB thru/right	E	66.2	290	#434	F	96.2	247	#423
31. (U) Revere Beach Parkway (Route 16)/U.S. Route 1 Interchange* **	-	-			-	-		
32a. (S) Beach Street/Everett Street/Route 1A/Route 16/Route 60 (aka Bell Circle) – East Intersection	**E**	**69.2**			**D**	**41.5**		
Beach WB right | right	C	31.9	0	52	C	34.3	39	122
NB Rotary thru | thru (continue in rotary)	B	14.4	0	m0	B	14.4	0	m0
NB Rotary right | right (onto Beach EB)	F	104.6	89	m38	E	56.3	43	m30
32b. (S) Beach Street/Everett Street/Route 1A/Route 16/Route 60 (aka Bell Circle) – West Intersection	**A**	**0.6**			**A**	**0.3**		
Beach EB right	A	0.4	0	0	A	0.3	0	0
Rotary SB thru | thru (cont in rotary)	A	0.6	7	8	A	0.4	4	4
Rotary SB right (onto Beach WB)	A	0.6	0	0	A	0.2	0	m0
32c. (S) Beach Street/Everett Street/Route 1A/Route 16/Route 60 (aka Bell Circle) – North Intersection	**B**	**18.5**			**B**	**17.4**		
Rotary WB thru | thru	C	26.6	350	452	C	24.7	341	438
Rotary WB right	B	18.4	98	152	B	17.3	107	m152
Route 60 NB thru | thru	A	0.1	0	m0	A	0.1	0	m0
Route 60 SB thru | thru	C	25.5	209	272	C	26.2	233	300

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Route 60 SB right (onto Rotary)	C	26.4	141	244	C	21.8	56	122
32d. (S) Beach Street/Everett Street/Route 1A/Route 16/Route 60 (aka Bell Circle) – South Intersection	**F**	**89.3**			**E**	**79.9**		
Rotary EB thru | thru	C	31.3	176	243	C	22.9	108	159
Rotary EB right | right (onto 1A SB)	B	19.2	140	221	B	18.9	121	215
Route 1A NB right | right (towards rotary)	B	17.6	130	183	B	17.3	113	157
Route 60 SB thru | thru	A	3.1	50	56	A	3.6	58	64
Route 60 NEB thru | thru/right	F	206.7	~801	#937	F	191.3	~760	#865
33. (S) Fellsway West (Route 28)/Fulton Street	**C**	**33.1**			**C**	**21.8**		
Fellsway West (Route 28) EB left	D	46.1	61	149	D	40.4	29	93
Fellsway West (Route 28) EB thru | thru	C	31.6	296	#702	B	15.6	94	276
Fellsway West (Route 28) EB right	B	18.3	0	0	B	12.6	0	0
Fellsway West (Route 28) WB left	D	46.8	63	152	D	41.3	37	110
Fellsway West (Route 28) WB thru | thru/right	C	30.8	281	#667	B	17.1	142	396
Fulton NB left/thru/right	D	36.0	146	#379	C	33.6	66	142
Fulton SB left/thru/right	D	38.6	87	#272	D	42.1	84	213
34. (S) Fellsway West (Route 28)/Salem Street (Route 60)	**D**	**38.5**			**C**	**33.4**		
Fellsway West (Route 28) EB left	E	58.1	154	#429	D	49.2	120	#324
Fellsway West (Route 28) EB thru | thru/right	C	31.2	252	#635	C	24.1	93	222
Fellsway West (Route 28) WB left	D	52.9	93	208	D	51.6	97	#218
Fellsway West (Route 28) WB thru | thru	D	37.5	254	#562	C	29.0	147	306
Fellsway West (Route 28) WB right	C	23.9	0	0	C	22.9	0	0
Salem (Route 60) NB left/thru | thru/right	D	43.5	153	#383	C	34.8	130	#292
Salem (Route 60) SB left/thru | thru/right	D	35.4	136	293	C	33.2	128	278
35. (S) Central Avenue/Medford Street/ Fellsway (Route 28)	**F**	**105.7**			**D**	**42.4**		

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Central EB left/thru/right	E	55.5	219	340	D	49.2	147	230
Medford WB left/thru	E	56.9	193	308	D	50.4	161	264
Medford WB right	D	38.8	0	65	D	36.4	0	52
Fellsway (Route 28) NB left	E	60.4	91	#188	D	51.0	72	147
Fellsway (Route 28) NB thru | thru	F	187.7	~610	#861	D	43.2	268	#460
Fellsway (Route 28) NB right	C	31.7	0	0	C	28.2	0	0
Fellsway (Route 28) SB left	F	135.5	~274	#517	E	57.4	157	#347
Fellsway (Route 28) SB thru | thru/right	D	46.5	372	#604	C	28.1	142	244
36. (S) Riverside Avenue/Fellsway (Route 28)	**D**	**35.2**			**C**	**30.6**		
Riverside EB left	E	65.6	147	#506	D	43.6	119	#424
Riverside EB thru*	C	32.9	147	#445	-	-	-	-
Riverside EB right*	C	26.8	26	119	-	-	-	-
Riverside EB thru/right*	-	-	-	-	D	39.1	159	#532
Riverside WB left	C	27.8	21	83	C	29.0	16	72
Riverside WB thru/right	C	27.8	74	215	C	27.9	60	184
Fellsway (Route 28) NB left	D	52.0	83	#232	D	52.1	74	193
Fellsway (Route 28) NB thru | thru | thru/right	C	30.5	177	#479	C	20.8	90	214
Fellsway (Route 28) SB left	D	45.5	63	164	D	45.8	21	74
Fellsway (Route 28) SB thru | thru | thru/right	C	31.7	173	#441	C	25.6	87	217
37. (U) I-93 Southbound Off-ramp/Mystic Valley Parkway (Route 16) Southbound Connector*	-	-			-	-		
38. (S) Harvard Street/Mystic Avenue (Route 38)	**E**	**63.7**			**C**	**30.5**		
Harvard EB left/thru | thru/right	D	43.3	254	323	D	40.5	203	264
Mystic Valley Parkway (Route 16) WB left	D	47.9	314	#479	D	42.7	303	#452
Mystic Valley Parkway (Route 16) WB thru	D	54.8	387	#583	D	53.9	391	#590
Mystic Valley Parkway (Route 16) WB right	D	48.3	106	165	D	42.7	95	155
Mystic (Route 38) NB left	E	67.3	69	#142	E	62.9	46	92

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Mystic (Route 38) NB thru | thru/right	E	77.3	257	#387	D	43.3	75	124
Mystic (Route 38) SB left	F	213.9	~176	#324	F	219.2	~179	#258
Mystic (Route 38) SB thru | thru/right	D	42.2	86	127	D	40.9	96	115
39. (S) Harvard Street/Mystic Valley Parkway (Route 16)/Mystic Valley Parkway (Route 16) Southbound Connector	**D**	**42.5**			**C**	**23.1**		
Mystic Valley Parkway (Route 16) EB thru | thru	B	12.7	190	m200	B	13.2	149	m159
Mystic Valley Parkway (Route 16) WB thru | thru	B	13.9	198	244	B	14.6	237	266
Mystic Valley (Route 16) SB left | left	F	91.4	~524	#657	E	57.3	415	#526
Mystic Valley (Route 16) SB right	D	35.1	164	273	D	35.9	186	284
40. (S) Mystic Valley Parkway (Route 16)/Locust Street	**C**	**21.1**			**A**	**7.7**		
Mystic Valley Parkway (Route 16) EB left | left	D	47.9	146	204	D	50.3	125	168
Mystic Valley Parkway (Route 16) EB thru | thru	B	10.1	311	505	B	11.0	312	405
Mystic Valley Parkway (Route 16) WB thru | thru | thru	B	17.6	188	290	B	18.9	221	304
Locust SB left	D	50.7	149	230	E	55.5	212	291
Locust SB right | right	D	38.6	0	39	D	37.3	0	31
41. (S) Mystic Valley Parkway (Route 16)/Commercial Street	**B**	**10.2**			**A**	**8.2**		
Mystic Valley Parkway (Route 16) EB left	D	43.1	48	94	D	41.5	30	67
Mystic Valley Parkway (Route 16) EB thru | thru	A	6.2	218	346	A	3.7	130	200
Mystic Valley Parkway (Route 16) WB thru | thru	B	11.1	234	371	A	8.0	175	271
Mystic Valley Parkway (Route 16) WB right	A	7.4	31	75	A	5.2	11	33
Commercial SB left	D	39.6	41	84	D	41.2	28	60
Commercial SB right	D	36.5	0	42	D	38.6	0	40
42a. (S) Mystic Valley/Revere Beach Parkway (Route 16)/Fellsway (Route 28)/ Middlesex Avenue (aka Wellington Circle) – West Intersection	**D**	**54.8**			**E**	**77.6**		
Mystic Valley Parkway (Route 16) EB thru | thru | thru |	D	48.3	287	#358	C	34.8	188	223

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
thru | thru/right								
Mystic Valley Parkway (Route 16) WB left | left | left	E	67.8	274	m#330	F	103.9	~347	#442
Mystic Valley Parkway (Route 16) WB thru | thru	B	13.7	152	m222	A	9.8	95	156
Fellsway (Route 28) SB left | left	F	197.6	~236	#342	F	97.8	~161	#260
Fellsway (Route 28) SB thru | thru | thru/right	D	53.6	118	#172	E	72.8	144	#225
Middlesex SWB left | left | left/bear right	B	13.7	12	14	B	14.8	14	17
Middlesex SWB bear right	B	13.7	6	11	B	16.7	9	m12
42b. (S) Mystic Valley/Revere Beach Parkway (Route 16)/Fellsway (Route 28)/ Middlesex Avenue (aka Wellington Circle) – East Intersection	**D**	**40.1**			**C**	**29.0**		
Mystic Valley Parkway (Route 16) EB left | left	D	46.5	118	m119	D	48.0	101	m129
Mystic Valley Parkway (Route 16) EB thru | thru | thru | thru	C	25.6	~162	m168	B	17.5	123	m133
Mystic Valley Parkway (Route 16) WB thru | thru | thru | thru | thru	C	26.7	276	313	C	27.7	312	352
Mystic Valley Parkway (Route 16) WB right	D	35.4	265	#430	C	33.8	251	391
Fellsway (Route 28) NB left	D	43.1	248	#406	C	31.7	141	223
Fellsway (Route 28) NB left/ thru | thru	E	59.3	358	#508	C	29.7	147	197
Fellsway (Route 28) NB bear right	F	145.1	~466	#675	D	51.4	262	#429
Fellsway (Route 28) NB right | right	C	20.6	303	401	B	18.8	273	351
42c. (S) Mystic Valley/Revere Beach Parkway (Route 16)/Fellsway (Route 28)/ Middlesex Avenue (aka Wellington Circle) – North Intersection	**B**	**15.7**			**C**	**22.0**		
Fellsway (Route 28) NB thru | thru | thru	A	6.0	121	m187	A	6.3	80	122
Middlesex SWB thru | thru | thru | thru/right	D	36.3	107	139	D	37.8	130	165
43. (U) Revere Beach Parkway (Route 16) Eastbound/River's Edge Drive Ramps* **	-	-			-	-		
44. (U) Revere Beach Parkway (Route 16) Westbound/River's	-	-			-	-		

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Edge Drive Ramps* **								
45. (S) I-93 Ramps/Mystic Avenue (Route 38)	**F**	**89.1**			**B**	**18.0**		
I-93 SB off-ramp WB left | left	F	176.2	~424	#493	C	32.9	90	133
I-93 SB off-ramp WB right	C	25.0	0	40	C	27.2	0	25
Mystic Ave (Route 38) NB thru | thru/right	E	63.7	~394	#621	B	17.4	95	206
Mystic Ave (Route 38) SB left	C	29.2	76	147	B	13.1	42	120
Mystic Ave (Route 38) SB thru | thru	A	8.3	48	69	A	4.9	25	48
46. (S) I-93 NB Off-ramp/McGrath Highway (Route 28)	**F**	**117.4**			**D**	**44.0**		
I-93 NB off-ramp WB thru | thru | thru	D	40.5	302	355	C	34.9	182	222
Fellsway (Route 28) SB bear left | bear left	D	45.9	371	441	D	42.8	354	435
Fellsway (Route 28) SB thru | thru/right	F	216.4	~906	#1013	D	51.4	439	#569
47a. (S) Mystic Avenue (Route 38)/McGrath Highway (Route 28)	**C**	**32.1**			**C**	**24.3**		
Mystic (Route 38) EB thru | thru/right	D	54.4	415	#545	D	38.8	253	303
Mystic (Route 38) EB right	D	36.3	27	137	C	32.3	0	58
Mystic (Route 38) WB thru | thru	C	29.0	402	m291	C	22.9	217	274
McGrath (Route 28) SB left	B	14.0	30	m23	B	11.3	11	m21
McGrath (Route 28) SB thru | thru	B	16.6	88	m64	B	11.1	42	m76
47b. (S) Mystic Avenue (Route 38)/McGrath Highway (Route 28)	**F**	**106.2**			**C**	**31.4**		
Mystic (Route 38) EB thru | thru	A	1.4	19	m21	A	1.0	10	11
McGrath (Route 28) NB left | left	F	246.8	~478	#606	E	60.8	189	249
McGrath (Route 28) NB right | right	D	46.2	13	55	D	46.5	0	47
48. (U) Mystic Avenue (Route 38)/I-93 Southbound On-ramp Diverge* **	-	-			-	-		
49. (S) Broadway/McGrath Highway (Route 28)	**F**	**104.3**			**D**	**42.8**		
Broadway EB left	F	83.1	241	#438	E	55.1	198	#343
Broadway EB left/thru | thru | thru	D	48.2	187	237	D	38.4	118	165

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Broadway EB right	C	31.6	28	64	C	25.6	0	25
Broadway WB left	D	52.8	106	180	D	48.6	70	131
Broadway WB left/thru | thru	E	55.9	135	189	D	47.4	73	115
Broadway WB right	D	38.9	135	212	D	36.2	86	147
McGrath (Route 28) NB left	E	79.5	122	#244	E	66.3	109	#215
McGrath (Route 28) NB thru | thru | thru/right	F	184.1	~780	#883	D	41.8	319	#389
McGrath (Route 28) SB left	E	73.4	112	#218	E	61.8	103	#217
McGrath (Route 28) SB thru | thru | thru/right	E	62.7	~452	#566	D	39.2	283	375
50. (U) Mystic Avenue (Route 38)/I-93 Northbound On-ramp Diverge* **	-	-			-	-		
51. (S) Dexter Street/Alford Street (Route 99)	**A**	**9.8**			**A**	**8.4**		
Driveway EB left/thru/right								
Dexter WB left/thru/right	C	34.7	127	197	C	25.6	98	162
Alford (Route 99) NB left/thru | thru/right	A	7.2	246	385	A	6.2	103	182
Alford (Route 99) SB left/thru | thru/right	A	7.4	202	322	A	6.6	120	213
52. (S) Cambridge Street/I-93 Northbound Off-ramp	**D**	**35.6**			**B**	**19.8**		
Cambridge Street EB thru | thru	B	14.7	181	189	B	10.5	125	173
Cambridge Street WB thru | thru	B	13.3	128	154	A	9.7	90	140
I-93 NB ramp NB left	C	32.8	244	310	C	32.0	183	277
I-93 NB ramp NB right	F	100.3	~410	#521	D	42.9	219	332
53. (S) Main Street/Maffa Way/Cambridge Street/Alford Street (Sullivan Square)	**D**	**47.3**			**C**	**32.2**		
Maffa EB thru | thru | thru	E	64.7	~447	#516	D	40.2	278	293
Maffa EB right	C	29.6	23	65	C	30.6	4	42
Cambridge NB right | right	D	40.5	420	#586	C	28.7	322	478
Alford SB left | left	D	54.0	73	114	D	50.8	51	88
Alford SB thru | thru	B	12.4	102	134	A	9.7	63	95
54. (S) Austin Street/New Rutherford Avenue(Route 99)	**E**	**59.7**			**D**	**42.6**		

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Gilmore Bridge EB left/thru | thru	D	49.0	560	662	D	35.9	212	296
Gilmore Bridge EB right	D	39.6	214	370	C	30.9	0	86
Austin Street WB left/thru | thru/right	F	88.1	211	229	D	50.6	93	121
New Rutherford NB (Route 99) left	E	65.2	100	156	E	55.0	136	182
New Rutherford (Route 99) NB thru/right	E	76.2	126	204	D	41.4	26	65
New Rutherford (Route 99) SB left/thru	D	54.3	177	270	D	35.8	38	80
New Rutherford (Route 99) SB right | right	E	79.4	297	#497	D	52.5	206	#323
55. (S) New Rutherford Avenue (Route 99)/Route 1 Ramps	**F**	**154.5**			**C**	**26.2**		
New Rutherford (Route 99) EB thru | thru | thru | thru	F	98.9	~414	#473	C	25.6	177	248
New Rutherford (Route 99) EB right	F	426.0	~819	#1033	C	24.0	23	120
New Rutherford (Route 99) WB left	D	48.6	485	#626	D	41.3	215	301
New Rutherford (Route 99) WB thru | thru | thru	B	20.0	71	110	B	14.0	27	66
Route 1 ramp NB left | left	D	53.3	57	89	D	42.9	65	95
Route 1 ramp NB right | right	B	11.6	0	18	B	18.2	0	18
56. (S) New Rutherford Avenue (Route 99)/Chelsea Street (City Square)	**D**	**39.6**			**C**	**23.8**		
New Rutherford (Route 99) EB left	E	65.3	77	m77	E	63.8	130	m201
New Rutherford EB thru | thru | thru	B	13.2	76	m75	A	2.7	16	28
New Rutherford EB right	F	101.6	290	m245	C	31.0	76	145
New Rutherford WB thru | thru | thru	C	26.6	224	289	B	15.1	72	120
New Rutherford WB right	C	23.9	0	67	B	15.9	0	60
Chelsea SB left	D	51.2	354	448	D	42.9	155	222
Chelsea SB thru	C	34.8	245	316	D	43.6	168	237
Chelsea SB right	C	27.9	0	43	C	32.5	0	51
57. (S) Monsignor O'Brien Highway (Route 28)/Edwin H. Land Boulevard/Charlestown Avenue	**F**	**151.7**			**F**	**91.0**		
Monsignor O'Brien Highway	F	269.5	~273	#442	F	115.5	145	#281

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
(Route 28) EB left								
Monsignor O'Brien Highway (Route 28) EB thru | thru | thru	D	39.0	170	213	D	39.5	177	212
Monsignor O'Brien Highway (Route 28) EB right	C	33.6	0	54	C	33.8	0	52
Monsignor O'Brien Highway (Route 28) WB left	F	132.8	~240	#413	F	106.6	198	#370
Monsignor O'Brien Highway (Route 28) WB thru | thru	D	37.2	199	258	D	37.5	205	265
Monsignor O'Brien Highway (Route 28) WB right	D	36.3	80	179	C	31.5	20	73
Edwin H. Land NB left	F	373.8	~432	#665	E	63.5	118	#257
Edwin H. Land NB thru | thru	F	400.9	~523	#698	F	288.2	~392	#545
Edwin H. Land NB right	D	49.1	42	#195	D	47.1	0	92
Charlestown SB left/thru | thru/right	D	49.1	278	338	D	49.6	291	358

**de facto left-turn lane
(S) signalized intersection
(U) unsignalized intersection
m Volume for 95^{th} percentile queue is metered by upstream signal.
~ Volume exceeds capacity. Queue is theoretically infinite. Queue shown is maximum after 2 cycles.
# 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.

Figure 4-11A and Figure 4-11B depict the capacity analysis summaries for both Friday p.m. and Saturday afternoon peak hour existing conditions at the signalized locations of intersections 1-17 and 18-26, respectively, all located in Everett. Figure 4-12 shows the capacity analysis summaries for both Friday p.m. and Saturday afternoon peak hour existing conditions at the signalized locations of intersections 27-32, located in Chelsea and Revere. Figure 4-13 shows the capacity analysis summaries for both Friday p.m. and Saturday afternoon peak hour existing conditions at the signalized locations of intersections 33-44, located in Medford. Figure 4-14 shows the capacity analysis summaries for both Friday p.m. and Saturday afternoon peak hours existing conditions at the signalized locations of intersections 45-57, located in Somerville, Boston, and Cambridge. The detailed results are tabulated in Appendix B, and the detailed Synchro output is also included in Appendix B. The results for each peak hour are described in the following sections.

4.2.6.1 FRIDAY P.M. PEAK HOUR EXISTING (2013) TRAFFIC OPERATIONS

Under existing (2013) Friday p.m. peak hour conditions, many of the study area intersections operate at an acceptable overall LOS D or better. The following sections describe operations at the intersections that are operating poorly under existing (2013) Friday p.m. peak hour conditions.

EVERETT

7. The intersection of ***Beacham Street/Broadway (Route 99)*** operates at an overall LOS F during the Friday p.m. peak hour. The Beacham Street westbound approach operates at LOS F due to the heavy volumes on the single-lane approach. The Broadway (Route 99) northbound approach operates at LOS F due to heavy volumes during the peak hour.

16. The intersection of ***Ferry Street/Broadway (Route 99)*** opertates at an overall LOS E during the Friday p.m. peak hour. The Broadway (Route 99) northbound and southbound left-turn/through lanes operate at LOS F due to heavy volumes on the single-lane movements.

CHELSEA

30. The intersection of ***Revere Beach Parkway (Route 16)/Webster Avenue*** operates at an overall LOS E during the Friday p.m. peak hour. The Revere Beach Parkway (Route 16) eastbound through lanes and shared through/right-turn lane operates at LOS E due to the heavy volumes during the peak hour. The Revere Beach Parkway (Route 16) westbound left-turn lane operates at LOS F due to the heavy volumes for this protected only movement. The Webster Avenue northbound left-turn lane operates at a LOS F due to the heavy volumes for this protected movement. The Webster Avenue southbound left-turn lane operates at LOS F. This is mainly due to left-turning vehicles in the Webster Avenue southbound direction not being able to find acceptable gaps in the opposing traffic for this permitted only movement during the peak hour. The Webster Avenue southbound shared through/right-turn lane operates at LOS E due to the heavy volumes during the Friday p.m. peak hour.

REVERE

32. At ***Bell Circle,*** the eastern intersection of Route 60/Bell Circle operates at LOS E during the Friday p.m. peak hour. The Bell Circle northbound right-turn lanes onto Beach Street operate at LOS F due to the heavy volumes during the peak hour. The southern intersection of Route 60/Route 1A/Bell Circle operates at an overall LOS F during the p.m. peak hour. The Route 60 northbound approach operates at LOS F due to the heavy volumes during the Friday p.m. peak hour.

MEDFORD

35. The intersection of ***Central Avenue/Medford Street/Fellsway (Route 28)*** operates at an overall LOS F during the Friday p.m. peak hour. The Central Avenue eastbound approach operates at LOS E due to the heavy volumes on this single-lane approach. The Medford Street westbound shared left-turn/through lane operates at LOS E due to the heavy volumes during the peak hour. The Fellsway (Route 28) northbound left-turn lane operates at LOS E due to the low green time to cycle length ratio for the protected movement and the Fellsway (Route 28) northbound and southbound through movements requiring more green time in respect to heavier volumes. The Fellsway (Route 28) northbound through lanes operate at LOS F due to the heavy volumes during the peak hour. The Fellsway (Route 28) southbound left-turn lane operates at LOS F due to the heavy volumes for this protected only movement.

38. The intersection of ***Harvard Street/Mystic Avenue (Route 38)*** operates at LOS Ein the Friday p.m. peak period. The Mystic Avenue (Route 38) northbound left-turn lane operates at LOS E due to the low green time to cycle length ratio for the protected movement and the Mystic Avenue (Route 38) northbound and southbound through movements requiring more green time in respect to heavier volumes. The Mystic Avenue (Route 38) northbound shared through and through/right-turn lanes operate at LOS E due to the heavy peak hour volume. The Mystic Avenue (Route 38) southbound left-turn lane operates at LOS F due to the low green time to cycle length ratio for the protected movement. The Harvard Street eastbound and westbound approaches require more green time to process the heavier volumes.

SOMERVILLE

45. The intersection of **I-93 Ramps/Mystic Avenue (Route 38)** operates at LOS Fin the Friday p.m. peak period. The I-93 SB off-ramp westbound left-turn lanes operate at LOS F due to the heavy volumes during the peak hour. The Mystic Avenue (Route 38) northbound approach operates at LOS E due to heavy volumes during the peak hour.

46. The intersection of the **I-93 NB Off-ramp/McGrath Highway (Route 28)** operates at LOS F in the Friday p.m. peak period. The McGrath Highway (Route 28) southbound approach operates at LOS F primarily due to the heavy volumes during the peak hour.

47. The southern intersection of **Mystic Avenue (Route 38)/McGrath Highway (Route 28)** operates at LOS Fin the Friday p.m. peak period. The McGrath Highway (Route 28) northbound left-turn lanes operate at LOS F due to heavy volumes for this protected only movement.

49. The intersection of **Broadway/McGrath Highway (Route 28)** operates at LOS F during the Friday p.m. peak period. The Broadway eastbound left-turn lane operates at LOS F, the Broadway westbound left-turn lane operates at LOS F, the Broadway westbound left-turn/through movement operates at LOS E, and the Broadway westbound right-turn lane operates at LOS F due to low green time to cycle length ratio. The McGrath Highway (Route 28) northbound left-turn lane operates at LOS E due to the low green time to cycle length ratio for the protected movement and the northbound and southbound through lanes requiring more green time in respect to heavier volumes. The McGrath Highway (Route 28) northbound through lanes and shared through/right-turn movement operate at LOS F due to heavy volumes during the peak hour. The McGrath Highway (Route 28) southbound left-turn lane operates at LOS F due to the low green time to cycle length ratio for the protected movement and the northbound and southbound through lanes requiring more green time in respect to heavier volumes. The McGrath Highway (Route 28) southbound through/right-turn movement operates at LOS F due to heavy volumes during the peak hour.

BOSTON

52. The intersection of ***Cambridge Street/I-93 NB Off-ramp,*** which is adjacent to the intersection of Cambridge Street/Maffa Way/Alford Street, operates at LOS D. However, the Cambridge Street northbound approach at Cambridge Street/Maffa Way/Alford Street operates at LOS F and queues back to the intersection of Cambridge Street/I-93 NB Off-ramp, as presented in Table 4-4. As a result of this queue, the I-93 NB Off-ramp right-turn lane also experiences significant delay.

54. The intersection of ***Rutherford Avenue/Austin Street/Gilmore Bridge*** operates at LOS E. The Austin Street westbound approach operates at LOS F due to the low green time to cycle length ratio for this movement. The Rutherford Avenue northbound left-turn lane and the northbound through/right-turn movement operate at LOS E due to the low green time to cycle length ratio for this movement. The Rutherford Avenue southbound right-turn lanes operate at LOS E due to heavy volume during the peak hour for this protected movement.

55. The intersection of ***New Rutherford Avenue/Route 1 Ramps*** operates at LOS F. The New Rutherford Avenue eastbound through lanes operate at LOS F due to heavy volume during the peak hour. The New Rutherford eastbound right-turn lane operates at LOS F due to heavy volume during the peak hour.

CAMBRIDGE

57. The intersection of ***Monsignor O'Brien Highway (Route 28)/Edwin H. Land Boulevard/Charlestown Avenue*** operates at LOS F. The Monsignor O'Brien Highway (Route 28) eastbound and westbound left-turn lanes operate at LOS F due to the low green time to cycle length ratio for the movement. The Monsignor O'Brien Highway (Route 28) eastbound and westbound through movements require more green time due to the heavier volumes. The Monsignor O'Brien Highway (Route 28) westbound left-turn lane operates at LOS F due to the low green time to cycle length ratio for the movement. The Land Boulevard northbound left-turn approach operates at LOS F, mainly due to the heavy volume for this protected only movement. The Land Boulevard northbound through lanes also operate at LOS F during the Friday p.m. peak period.

4.2.6.2 SATURDAY AFTERNOON PEAK HOUR EXISTING (2013) TRAFFIC OPERATIONS

Under Saturday afternoon peak hour conditions, many of the study area intersections operate at an acceptable overall LOS D or better. The following sections describe operations at the intersections that are operating poorly under existing (2013) Saturday afternoon peak hour conditions.

CHELSEA

29. The intersection ***Revere Beach Parkway (Route 16)/Washington Street*** operates at an overall LOS E during the Saturday afternoon peak hour. The Revere Beach Parkway (Route 16) eastbound left-turn lane operates at LOS F due to the low green time to cycle length ratio for the movement and the eastbound and westbound through movements requiring more green time in respect to heavier volumes. The Revere Beach Parkway (Route 16) through lanes and shared through/right-turn lanes operate at LOS E due to the heavy volumes during the peak hour. The Revere Beach Parkway (Route 16) westbound left-turn lane operates at LOS E due to the low green time to cycle length ratio for the movement and the eastbound and westbound through movements requiring more green time in respect to heavier volumes. The Revere Beach Parkway (Route 16) westbound though lanes and shared through/right-turn lane operates at LOS E due to the heavy volumes during the peak hour.

30. The intersection ***Revere Beach Parkway (Route 16)/Webster Avenue*** operates at an overall LOS E during the Saturday afternoon peak hour. The Revere Beach Parkway (Route 16) westbound left-turn lane operates at LOS F due to the heavy volumes for this protected only movement. The Webster Avenue northbound left-turn lane operates at LOS F. This is mainly due to the left-turning movement in the Webster Avenue southbound direction not being able to find acceptable gaps in the opposing traffic, for this protected/permitted movement during the peak hour. The Webster Avenue southbound left-turn lane operates at LOS F. This is mainly due to the Webster Avenue southbound left-turning movement not being able to find acceptable gaps in the opposing traffic, for this permitted only movement during the peak hour. The Webster Avenue southbound shared through/right-turn lane operates at LOS F due to the heavy volumes during the heavy volumes during the peak hour.

REVERE

32. The southern intersection of ***Route 16/Route 1A/Route 60 (Bell Circle)*** operates at an overall LOS E during the p.m. peak hour. The Route 60 northbound approach operates at LOS F due to the heavy volumes during the peak hour.

MEDFORD

38. The intersection of ***Harvard Street/Mystic Avenue (Route 38)*** operates at LOS E. The Route 38 northbound left-turn lane operates at LOS E due to the low green time to cycle length ratio for the protected movement and the Route 16 eastbound and westbound approaches requiring more green time in respect to heavier volumes. The Route 38 southbound left-turn lane operates at LOS F due to the low green time to cycle length ratio for the protected movement and the Route 16 eastbound and westbound approaches requiring more green time in respect to heavier volumes.

BOSTON

52. The intersection of ***Cambridge Street/I-93 NB Off-ramp,*** which is adjacent to the intersection of Cambridge/Maffa Way/Alford Street, operates at LOS B. However, the Cambridge Street northbound approach at Cambridge Street/Maffa Way/Alford Street queues back to the intersection of Cambridge Street/I-93 NB Off-ramp, as presented in Table 4-4. As a result of this queue, the I-93 NB Off-ramp right-turn lane also experiences significant delay.

CAMBRIDGE

57. The intersection of ***Monsignor O'Brien Highway (Route 28)/Edwin H. Land Boulevard/Charlestown Street*** operates at LOS F. The Monsignor O'Brien Highway (Route 28) eastbound left-turn lane operates at LOS F due to the low green time to cycle length ratio for the movement and the eastbound and westbound through movements requiring more green time in respect to heavier volumes. Monsignor O'Brien Highway (Route 28) westbound left-turn approach operates at LOS F due to the low green time to cycle length ratio for the movement and the eastbound and westbound through movements requiring more green time in respect to heavier volumes. The Land Boulevard northbound left-turn approach operates at LOS E, mainly due to

the heavy volume for this protected only movement. The Land Boulevard northbound through lanes operate at LOS F, mainly due to the heavy volumes during the peak hour. Additionally, the failure for the northbound through lanes are due to the low green time to cycle length ratio for the movement and the eastbound and westbound movements requiring more green time in respect to heavier volumes.

4.2.7 EXISTING PEDESTRIAN AND BICYCLE FACILITIES

Sidewalks are provided on most study area roadways, including on Broadway (Route 99), Route 16, Route 28, and Rutherford Avenue. Sidewalks are not provided on both sides of the roadway in some locations, such as Mystic Avenue (Route 38) near McGrath Highway (Route 28).

Bicycle lanes are provided on Broadway (Route 99) between the Boston City Line and Sweetser Circle. Shared lane markings are provided on Bow Street. Shared use paths are provided in the study area within the Gateway Center, at the Mystic River Reservation, and along the Malden River north of Revere Beach Parkway (Route 16). Bicycle paths are also provided along the Mystic River Reservation, along both the north and south sides of the Mystic River. A project to repair the Woods Memorial Bridge on Revere Beach Parkway (Route 16) is proposed to add wide shoulders and widened 10-foot sidewalks to the bridge and provide connections to existing and proposed shared use paths that run along the Malden River and connect to existing paths. Figure 4-15 shows existing and planned pedestrian and bicycle facilities in the vicinity of the project site.

The data collection effort also included collecting pedestrian and bicycle counts at all study area intersections. Figure 4-16A and Figure 4-16B depict the existing (2013) Friday p.m. peak hour pedestrian and bicycle volumes at intersections 1-17 and 18-26, respectively, located in Everett. Figure 4-17 shows the existing (2013) Friday p.m. peak hour pedestrian and bicycle volumes at intersections 27-32, located in Chelsea and Revere. Figure 4-18 shows the existing (2013) Friday p.m. peak hour pedestrian and bicycle volumes at intersections 33-44, located in Medford. Figure 4-19 shows the existing (2013) Friday p.m. peak hour pedestrian bicycle volumes at intersections 45-57, located in Somerville, Boston, and Cambridge. Figure 4-20A and Figure 4-20B depict the existing (2013) Saturday p.m. peak hour pedestrian and bicycle volumes at intersections 1-7 and 18-26, respectively, located in Everett. Figure 4-21 shows the existing (2013) Saturday p.m. peak hour pedestrian and bicycle volumes at intersections 27-32, located in Chelsea and Revere. Figure 4-22 shows the existing (2013) Saturday p.m. peak hour pedestrian and bicycle volumes at intersections 33-44, located in Medford. Figure 4-23 shows the existing (2013)

Saturday p.m. peak hour pedestrian and bicycle volumes at intersections 45-57, located in Somerville, Boston, and Cambridge.

4.2.8 EXISTINGPUBLIC TRANSPORTATION SERVICES

The Project Site is well-served by transit with a number of MBTA subway stations within areas proximate to it. The Project Site is also served by a number of local bus routes on Broadway (Route 99). The services are shown in Figure 4-24 and described in more detail in the following sections.

4.2.8.1 MBTA ORANGE LINE

The Project Site is located with two miles of two existing MBTA Orange Line stations. Sullivan Square Station is located at Broadway/Cambridge Street in Charlestown, approximately 1.2 miles southeast of the Project Site. Wellington Station is located at Revere Beach Parkway (Route 16)/Corporation Way in Medford, approximately 1.5 miles west of the Project Site, via local roadways.Malden Center Station is located approximately 3.1 miles northwest of the Project Site via local roadways. Assembly Square Station, which is currently under construction and is scheduled to be completed by the fall of 2014, will be located off Mystic Avenue in Somerville, approximately 1/4 mile southwest of the Project Site, as the crow flies, but about 1.6 miles from the Project Site via the shortest local route. Sidewalks and bicycle accommodations (separate lane or shared travelled-way) are provided along Broadway (Route 99), Alford Street (Route 99), and Revere Beach Parkway (Route 16) that provide connections between these facilities and the Project Site.

Orange Line Schedule

The MBTA Orange Line runs from 5:16 a.m. to approximately 1:00 a.m. on weekdays and Saturdays, with the last trains leaving Oak Grove and Forest Hills at 12:30 a.m. and 12:35 a.m., respectively. On Sundays, service begins at 6:00 a.m. and the last trains leave Oak Grove and Forest Hills at 12:30 a.m. and 12:35 a.m., respectively. During the weekday a.m. and weekday p.m. peak hour, the MBTA Orange Line operates at 6-minute headways. The Orange Line operates at 8-minute, 10-minute, or 13-minute headways during off-peak periods.

Orange Line Capacity

The MBTA's Service Delivery Policy outlines maximum occupancy goals, or loading standards, that vary depending on time of day, represented by a ratio of the number of patrons compared to the number of seats in a car. During the early a.m. period (6:00 a.m. – 7:00 a.m.), the a.m. peak

period (7:00 a.m. – 9:00 a.m.), the midday school period (1:30 p.m.– 4:00 p.m.) and the p.m. peak period (4:00 p.m. – 6:00 p.m.), a passenger load equaling 225% of the number of seats in a car is considered the average load for these time periods. MBTA Orange Line cars each have 58 seats; therefore, a passenger load of 131 passengers is consideredan average passenger load during these periods. During off-peak periods, a passenger load equaling 140% of the number of seats (or 81 passengers) is considered average within the "core areas (between North Station and Back Bay Station), and a passenger load equaling 100% of the number of seats (or 58 passengers is considered average outside of the core area. The ultimate capacity of an MBTA car is defined by the "crush capacity", or the capacity of a car where each standing patron takes up 1.5 square feet. The crush capacity of an orange line car is 224 patrons, or 3.86 times more passengers than the number of seats.

Table 4-7 outlines the expected passenger capacity of an Orange Line train, given load standards and car capacities of the Orange Line cars and headway between trains. On Saturdays, the load standard is 100% of the total number of seats, and headways are 10 minutes throughout the day, for a capacity of 2,088 per hour.

Table 4-7, MBTA Orange Line Weekday Capacity

Period	Seats per Car	Load Standard	Car Capacity	Cars perTrain	Train Capacity	Trains per Hour	Capacity per Hour
Rush Hour	58	225%	130	6	780	10	7,800
Midday Core	58	140%	81	6	486	7.5	3,645
Midday	58	100%	58	6	348	7.5	2,610
Midday School	58	225%	130	6	780	7.5	5,580
Evening Core	58	140%	81	6	486	6	2,916
Evening	58	100%	58	6	348	6	2,088
Late Night Core	58	140%	81	6	486	6	2,916
Late Night	58	100%	58	6	348	6	2,088

The MBTA cannot collect accurate boarding data for Orange Line trains because riders do not go through turnstiles when transferring from the

Red Line or the Green Line. Accurate alighting data is also not available. However, the Boston Region Municipal Planning Organization (MPO) collected CharlieCard data on Thursday, September 20, Saturday, September 22, and Sunday, September 23, 2012, which consists of hourly boardings and alightings at each Orange Line station. This data, provided in AppendixB, shows that the Thursday ridership on the Orange Line only exceeded the load capacity during two periods: from 9:00–10:00 a.m., just after the MBTA considers the a.m. peak hour to end; and from 7:00 p.m. – 8:00 p.m., just after the MBTA considers the p.m. peak hour to end. The actual ridership during these periods is typically lower than the ridership in the peak periods; however, during each of these periods, the assumed capacity of an Orange Line car is 100% of the seats, or 58 riders (or 140% of seats /81 riders in the core area), as opposed to 225% of the seats, or 130 riders, that is assumed in the peak periods. There were no periods on Saturday that had average car loads that exceeded the MBTA's assumed capacity of an Orange Line car.

Table 4-6 shows the existing passenger load as a percentage of total capacity of the Orange Line between Wellington and Sullivan Square stations on a typical weekday. As shown in Table 4-8, hourly passenger load never exceeded capacity between 2:00–10:00 p.m. The northbound (outbound) direction consistently had greater passenger loads than the southbound (inbound) direction.

Table 4-8, MBTA Orange Line Capacity between Wellington and Sullivan Square Stations

Time	Total Hourly Capacity	Northbound (toward Oak Grove)		Southbound (toward Forest Hills)	
		Passengers	Capacity Used	Passengers	Capacity Used
2:00-3:00 p.m.	2,088	1,276	48.9%	1,024	39.2%
3:00-4:00 p.m.	7,800	2,104	26.8%	1,003	12.8%
4:00-5:00 p.m.	7,800	3,777	48.1%	1,044	13.3%
5:00-6:00 p.m.	7,800	5,729	72.9%	1,756	15.0%
6:00-7:00 p.m.	7,800	2,889	36.8%	681	8.7%
7:00-8:00 p.m.	2,088	1,772	84.9%	424	20.3%
8:00-9:00 p.m.	2,088	1,494	71.9%	323	15.5%
9:00-10:00 p.m.	2,088	1,023	49.0%	17	0.8%

4.2.8.2 MBTA BUSES

The Project Site is also located on or within walking distance of several bus lines. Buses typically run from about 5:00 a.m. to about 1:00 a.m. on both weekdays and Saturdays. Bus routes, including destinations and peak hour headways, are shown in Table 4-9. MBTA bus routes #104, #105, and #109, which run along Broadway (Route 99), are expected to be the primary bus routes for access to the Project Site.

Table 4-9, MBTA Bus Routes Near the Project Site

Route		Peak Headway (min)	Hours of Operation	
			Weekday	Saturday
CT-2	Sullivan Sq. – Ruggles via Kendall/MIT	20-25	6:00 a.m. – 7:40 p.m.	N/A
86	Sullivan Sq. – Reservoir (Cleveland Cir.) via Harvard/Johnston Gate	8-20	5:00 a.m. – 1:10 a.m.	5:00 a.m. – 1:10 a.m.
89	Sullivan Sq. – Clarendon Hill/Davis Sq. via Broadway	6-15	4:30 a.m. – 1:30 a.m.	4:30 a.m. – 1:30 a.m.
90	Davis Sq. – Wellington via Sullivan Sq. & Assembly Mall	40-55	6:30 a.m. – 10:40 p.m.	7:30 a.m. – 10:30 p.m.
91	Sullivan Sq. – Central Sq. (Cambridge) via Washington St.	25-30	5:00 a.m. – 1:10 a.m.	5:00 a.m. – 1:10 a.m.
92	Assembly Sq. Mall – Downtown via Sullivan Sq., Main St. & Haymarket	15-20	5:00 a.m. – 10:20 p.m.	5:00 a.m. – 10:20 p.m.
93	Sullivan Sq. – Downtown via Bunker Hill St. & Haymarket	7-15	4:30 a.m. – 1:30 a.m.	4:30 a.m. – 1:30 a.m.
95	Sullivan Sq. – West Medford via Mystic Ave.	20-25	5:15 a.m. – 1:20 a.m.	5:15 a.m. – 1:20 a.m.
97	Malden Ctr. – Wellington via Commercial & Hancock Sts.	30	6:10 a.m. – 7:00 p.m.	9:30 a.m. – 7:20 p.m.
99	Wellington –Boston Regional Medical Ctr. via Main St. & Malden Ctr.	20-40	6:00 a.m. – 1:30 a.m.	6:00 a.m. – 1:30 a.m.
100	Elm St. – Wellington via Fellsway	20-40	5:15 a.m. – 12:40 a.m.	5:15 a.m. – 12:40 a.m.
101	Malden Ctr. – Sullivan Sq. via Salem St., Main St., & Broadway	6-15	5:00 a.m. – 1:40 a.m.	5:00 a.m. – 1:40 a.m.
104	Malden Ctr. – Sullivan Sq. via Ferry St. & Broadway	12-27	5:10 a.m. – 1:00 a.m.	4:40 a.m. – 1:00 a.m.
105	Malden Ctr. – Sullivan Sq. via Newland St. Housing	30-40	5:00 a.m. – 7:40 p.m.	6:15 a.m. – 7:40 p.m.
106	Lebanon St., Malden or Franklin Sq. – Wellington via Main St.	7-23	5:00 a.m. – 1:20 a.m.	5:00 a.m. – 1:20 a.m.
108	Linden Sq. – Wellington via Malden Ctr. & Highland Ave.	5-25	5:10 a.m. – 1:30 a.m.	5:30 a.m. – 1:20 a.m.

Route		Peak Headway	Hours of Operation	
109	Linden Sq. – Sullivan Sq. via Glendale Sq.	14-16	5:00 a.m. – 1:20 a.m.	5:00 a.m. – 1:10 a.m.
110	Wonderland or Broadway & Park Ave. – Wellington via Park Ave., & Woodlawn	10-30	5:00 a.m. – 1:10 a.m.	5:00 a.m. – 1:10 a.m.
112	Wellington – Wood Island via Central Ave., Mystic Mall & Admiral's Mall	40	6:10 a.m. – 8:40 p.m.	7:00 a.m. – 8:10 p.m.
134	North Woburn – Wellington via Woburn Sq., Winchester Ctr., Winthrop St., Medford Sq., Riverside Ave. & Meadow Glen Mall	15-30	5:20 a.m. – 1:10 a.m.	6:15 a.m. – 1:20 a.m.

4.2.9 CRASH DATA AND ANALYSIS

Crash data for the study intersections were obtained from MassDOT for the most recent three-year period available (2008-10). During that period, 1,311 vehicular collisions were reported at the study intersections, with three fatalities. Of the 1,311 reported collisions, 403 were reported in Everett, 389 in Medford, 77 in Boston, 150 in Somerville, 98 in Revere, 151 in Chelsea, and 43 in Cambridge. Within the 1,311 collisions, 15 crashes involved a cyclist and 36 crashes involved a pedestrian. Most crashes (63%) occurred during daylight hours on a dry roadway surface.

The average crash rate in District 4, which includes Everett, Medford, Malden, and Revere, is 0.77 crashes per million entering vehicles at signalized intersections, and 0.58 crashes per million entering vehicles at unsignalized intersections. The average crash rate in District 6, which includes Boston, Cambridge, and Chelsea, is 0.76 crashes per million entering vehicles at signalized intersections and 0.58 crashes per million entering vehicles at unsignalized intersections.

The following intersections had crash rates that were greater than the District 4 average crash rate (for Everett, Medford, Malden, and Revere) or the District 6 average crash rate (for Boston, Cambridge, and Chelsea) at signalized or unsignalized intersections. Table 4-10 summarizes the crash history and crash rate at every study area intersection. Figure 4-25A and Figure 4-25B show crash information at intersections 1-17 and intersections 18-26, respectively, all located in Everett. Figure 4-26 shows crash information at intersections 27-32, located in Chelsea and Revere. Figure 4-27 shows crash information at intersections 33-44, which are located in Medford. Figure 4-28 shows the crash information at intersections 45-57, located in Somerville, Boston, and Cambridge.

EVERETT

4. ***Bow Street/Lynde Street*** had a crash rate of 0.70 crashes per million entering vehicles, greater than the District 4 average crash rate of 0.58. Three crashes were reported at the intersection from 2008 to 2010, including two angle crashes.

10. ***Santilli Circle*** was analyzed as multiple signalized and unsignalized intersections due to its complex design. Two locations had crash rates that exceeded the District 4 average. At the first location, the western intersection of Route 16 and Santilli Circle, 54 crashes were reported from 2008 to 2010, for a crash rate of 1.03, exceeding the District 4 average crash rate of 0.77 at signalized intersections. At the second location, the Santilli Highway on-ramp to Santilli Circle, 11 crashes were reported from 2008-2010, for a crash rate of 0.62, slightly greater than the District 4 average crash rate of 0.58 at unsignalized intersections.

16. ***Ferry Street/Broadway (Route 99)***had a crash rate of 0.86, greater than the District 4 average crash rate of 0.77. Of the 22 crashes reported from 2008 to 2010, seven (or 32%) were single-vehicle crashes and six (27%) were rear-end crashes.

21. ***Revere Beach Parkway (Route 16)/2nd Street*** had a crash rate of 0.84, greater than the District 4 average of 0.77. From 2008 to 2010, 26 crashes were reported at the intersection, including nine (or 35%) angle-type crashes and nine rear-end crashes.

26. ***Revere Beach Parkway (Route 16)/Everett Avenue*** had a crash rate of 1.07, greater than the District 4 average crash rate of 0.77. From 2008 to 2010, there were 32 crashes reported at the intersection. Seventeen crashes (or 53%) were rear-end crashes.

CHELSEA

27. ***Williams Street/Chestnut Street***had a crash rate of 1.03, greater than the District 6 average crash rate of 0.76. From 2008-2010, there were 18 crashes at the intersection, including seven (or 39%) angle crashes and four (or 22%) sideswipe crashes.

29. ***Revere Beach Parkway (Route 16)/Washington Avenue*** had a crash rate of 1.22, greater than the District 6 average crash rate of 0.76. Of the 59 crashes reported at the intersection from 2008 to 2010, 24 (or 41%) were rear-end crashes, 18 (or 31%) were angle crashes, and 10 (17%) were sideswipe crashes. One fatality was reported at the intersection.

30. ***Revere Beach Parkway (Route 16)/Webster Avenue*** had a crash rate of 1.09, greater than the District 6 average crash rate of 0.76. Sixty-one crashes were reported at the intersection from 2008 to 2010, including 19 (or 31%) angle crashes, 19 (31%) rear-end crashes, and 12 (20%) sideswipe crashes.

REVERE

32. ***Revere Beach Parkway (Route 16)/Route 1A/Route 16 (Bell Circle)*** was analyzed as multiple signalized and unsignalized intersections due to its complex design. Bell Circle had one signalized location where the crash rate was 0.90, which exceeds the District 6 average crash rate of 0.76. At the intersection of Beach Street/Bell Circle/Everett Street, 18 crashes occurred from 2008 to 2010, including seven (or 39%) rear-end crashes, four (22% angle crashes, and four (22%) sideswipe crashes.

MEDFORD

34. ***Fellsway West (Route 28)/Salem Street (Route 60)*** had a crash rate of 0.84, greater than the District 4 average crash rate of 0.77. From 2008-2010, 34 crashes occurred at the intersection, including 11 (or 32%) angle crashes and 11 rear-end crashes.

36. ***Fellsway (Route 28)/Riverside Avenue*** had a crash rate of 0.79 from 2008-2010, slightly higher than the District 4 average crash rate of 0.77. During that period, 32 crashes were reported at the intersection, including 11 (or 32%) rear-end crashes, 8 (24%) angle crashes, and five (15%) sideswipe crashes.

38. ***Harvard Street/Mystic Avenue (Route 38)*** had a crash rate of 0.90, greater than the District 4 average crash rate of 0.77 at signalized intersections. Thirty-three crashes were reported at the intersection from 2008 to 2010, including 16 (or 48%) angle crashes, six (18%) rear-end crashes, and five (15%) sideswipe crashes.

42. ***Mystic Valley Parkway (Route 16)/Fellsway (Route 28)/Middlesex Avenue (Wellington Circle)*** was analyzed as multiple signalized and unsignalized intersections due to its complex design. Wellington Circle had three locations where the crash rate exceeded the District 4 crash rate of 0.77 at signalized intersections. The first location, Mystic Valley Parkway (Route 16) eastbound at the Fellsway (Route 28) southbound and the Route 16 connector, had a crash rate of 1.05. Forty-nine crashes occurred at the location from 2008 to 2010, including 25 (or 51%) angle crashes, 11 (22%) rear-end crashes, and nine (18%) sideswipe crashes. The second location at Wellington Circle that exceeded the District 4 average crash rate was Revere Beach Parkway (Route 16) westbound at the Fellsway (Route 28) southbound

and the Route 28 connector, where the crash rate was 1.08. At this location, 38 crashes occurred from 2008 to 2010, including 11 (or 29%) rear-end crashes, nine (24%) sideswipe crashes, and eight (21% angle crashes. The final location that exceeded the District 4 average crash rate was Revere Beach Parkway (Route 16) westbound at the Fellsway (Route 28) northbound, which had a crash rate of 1.05. Sixty crashes occurred at the Revere Beach Parkway (Route 16) westbound/Fellsway (Route 28) northbound from 2008 to 2010, including 24 (or 40%) rear-end crashes, 16 (27%) sideswipe crashes, and 14 (23%) angle crashes.

47. ***Mystic Avenue (Route 38)/McGrath Highway (Route 28)*** was analyzed as three separate locations due to the complex design of the intersection. One location at the intersection, Mystic Avenue (Route 38)/McGrath Highway (Route 28) southbound, had a crash rate of 2.29, which exceeded the District 4 average crash rate of 0.77 at signalized intersections. From 2008 to 2010, 92 crashes occurred at the location, including 45 (or 49%) angle crashes and 31 (or 34%) rear-end crashes. One fatality was reported at this location.

57. ***Monsignor O'Brien Highway (Route 28)/Edwin H Land Boulevard/ Charlestown Avenue*** had a crash rate of 0.79 from 2008 to 2010, slightly greater than the District 6 average crash rate of 0.76. During that period, 43 crashes were reported at the intersection, including 16 (or 37%) rear-end crashes, 13 (30%) angle crashes, seven (16%) sideswipe crashes, and six (14%) single-vehicle crashes.

Table 4-10, Study Area Crash Rate Summary

Intersection	Number of Crashes				Crash Rate Averages	
	2008	2009	2010	Total	Intersection	District
Signalized						
7. Beacham Street/Broadway (Route 99)	6	5	6	17	0.57	0.77
8. Bowdoin Street/Broadway (Route 99)	3	0	0	3	0.11	
10. Santilli Circle	40	33	27	100	-	
12. 2nd Street/Corey Street/Broadway (Route 99)	2	1	0	3	0.20	
13. Norwood Street/Church Street/Broadway (Route 99)	7	5	2	14	0.76	
14. Mansfield Street/Church Street/Broadway (Route 99)	1	2	4	7	0.52	
15. High Street/Hancock Street/Broadway (Route 99)	2	3	3	8	0.49	
16. Ferry Street/Broadway (Route 99	14	5	3	22	**0.86**	
17. McKinley Street/Cameron Street/Broadway	4	0	5	9	0.53	0.77

Intersection	Number of Crashes				Crash Rate Averages	
(Route 99)/Lynn Street						
18. Tileston Street/Oakes Street/Main Street	3	2	1	6	0.33	
20. Peirce Avenue/Bellingham Avenue/Main Street	4	3	2	9	0.72	
21. Revere Beach Parkway (Route 16)/Garvey Street/2nd Street	9	5	12	26	0.41	
22. Revere Beach Parkway (Route 16)/Spring Street	3	6	5	14	0.26	
23. Revere Beach Parkway (Route 16)/South Ferry Street	6	1	1	8	0.17	
24. Revere Beach Parkway (Route 16)/Vine Street	8	4	6	18	0.62	
25. Revere Beach Parkway (Route 16)/Vale Street	2	3	2	7	0.32	
26. Revere Beach Parkway (Route 16)/Everett Avenue	8	13	11	32	**1.07**	
27. William Street/Chestnut Street	4	8	6	18	**1.03**	
28. Revere Beach Parkway (Route 16)/Union Street	2	4	7	13	0.31	
29. Revere Beach Parkway (Route 16)/Washington Street	25	16	18	59	**1.22**	0.76
30. (S) Revere Beach Parkway (Route 16)/Webster Avenue	22	17	22	61	**1.09**	
32. Bell Circle	36	36	10	82	-	
33. Fellsway West (Route 28)/Fulton Street	10	6	4	20	0.59	
34. Fellsway West (Route 28)/Salem Street (Route 60)	13	14	7	34	**0.84**	
35. Central Avenue/Medford Street/ Fellsway (Route 28)	4	3	2	9	0.23	
36. Riverside Avenue/Fellsway (Route 28)	17	11	4	32	**0.79**	
38. Harvard Street/Mystic Avenue (Route 38)	20	7	6	33	**1.12**	
39. Harvard Street/Mystic Valley Parkway (Route 16)/Mystic Valley Parkway (Route 16) Southbound Connector	1	0	2	3	0.07	0.77
40. Mystic Valley Parkway (Route 16)/Locust Street	11	6	4	21	0.46	
41. Mystic Valley Parkway (Route 16)/ Commercial Street	7	3	2	12	0.27	
42. Wellington Circle	93	56	40	189	-	
46. I-93 NB Off-ramp/McGrath Highway (Route 28)	5	2	2	9	0.21	
47. Mystic Avenue (Route 38)/ McGrath Highway (Route 28)	27	38	31	96	-	
49. Broadway/McGrath Highway (Route 28)	13	14	8	35	0.55	

Intersection	Number of Crashes				Crash Rate Averages	
51. Dexter Street/Alford Street (Route 99)	4	1	3	8	0.24	0.76
52. Cambridge Street/I-93 Northbound Off-ramp	0	0	1	1	0.05	
53. Main Street/Maffa Way/Cambridge Street/Alford Street (Sullivan Square)	11	9	22	42	-	
54. Austin Street/New Rutherford Avenue (Route 99)	6	4	2	12	0.35	
55. New Rutherford Avenue (Route 99)/Route 1 Ramps	2	0	4	6	0.21	0.76
56. New Rutherford Avenue (Route 99)/Chelsea Street (City Square)	4	4	0	8	0.14	
57. Monsignor O'Brien Highway (Route 28)/Edwin H. Land Boulevard/Charlestown Avenue	21	8	14	43	**0.79**	
Unsignalized						
1. Broadway/Horizon Way	0	1	1	2	0.07	
2. Bow Street/Mystic Street	0	0	0	0	0.00	
3. Broadway/Lynde Street	6	2	5	13	0.49	
4. Bow Street/Lynde Street	3	0	0	3	**0.70**	
5. Broadway/Thorndike Street	2	2	1	5	0.19	
6. Bow Street/Thorndike Street	0	0	0	0	0.00	
9. Beacham Street/Robin Street	3	0	1	4	0.36	
10. Sweetser Circle	40	33	27	100	-	
19. Main Street/Linden Street/Waters Avenue	3	0	3	6	0.37	
31. Route 16/Route 1 Interchange	6	6	4	16	-	0.58
37. Route 16 Southbound Connector/I-93 Southbound Off-Ramp	2	0	3	5	0.28	
43. Route 16 Eastbound/ River's Edge Drive Ramps	8	3	5	16	0.39	
44. Route 16 Westbound/ River's Edge Drive Ramps	8	7	0	15	0.36	
45. Mystic Avenue/I-93 Ramps	3	1	2	6	-	
48. Mystic Avenue/I-93 Southbound On-Ramp	1	0	3	4	0.30	
50. Mystic Avenue/I-93 Northbound On-Ramp	1	3	0	4	-	

Each year, MassDOT releases a Top 200 Crash Locations list, which ranks the most dangerous intersections in Massachusetts in terms of Equivalent Property Damage Only (EPDO). The EPDO at each intersection is calculated by assigning 10 points for fatal crashes, 5 points for injury crashes, and 1 point for crashes where there was no injury. MassDOT treats intersections as crash clusters; therefore, the exact number of

crashes reported in the Top 200 Crash Locations list may vary from those reported in Table 4-10.

The intersection of Mystic Street (Route 38)/McGrath Highway (Route 28) in Somerville is listed as #23 on MassDOT's 2010 Top 200 Crash Locations list, which includes crashes from 2008-2010. At the intersection, 63 crashes were reported, including 1 fatal crash and 24 injury crashes, for an EPDO of 168. It should be noted that MassDOT likely considered the intersection of Route 28 and Route 38 as one large cluster that includes the I-93 ramps and their intersections with Mystic Street and McGrath Highway. The intersection of Route 16/Route 38 in Medford was listed at #143 on the 2010 Top 200 Crash Locations list with 43 crashes, including 16 injury crashes, for an EPDO of 107.

All crash data and collision diagrams can be foundin Appendix B.

4.3 NO-BUILD CONDITIONS

Traffic volumes in the study area have been projected to the year 2023, which reflects a ten-year planning horizon from the current year, consistent with MassDOT guidelines for the preparation of Traffic Impact Assessments for Functional Design Reports (FDRs). Independent of the Project, traffic volumes on the roadway network in the year 2023 under No-Build conditions include all existing traffic and new traffic resulting from background traffic growth. Anticipated Project-generated traffic volumes superimposed upon the 2023 No Build traffic volumes reflect the 2023 Build conditions with the Project.

4.3.1 FUTURE TRAFFIC GROWTH

Future traffic growth is a function of the expected land development in the immediate area and surrounding region. Several methods can be used to estimate this growth. A procedure frequently employed estimates an annual percentage increase in traffic growth and applies that percentage to all traffic volumes under study. The drawback to such a procedure is that some turning volumes may actually grow at either a higher or a lower rate at particular intersections.

An alternative procedure identifies the location and type of planned development, estimates the traffic to be generated, and assigns it to the area roadway network. This procedure produces a more realistic estimate of growth for local traffic; however, potential population growth and development external to the study area would not be accounted for in the resulting traffic projections.

To provide a conservative analysis framework, both procedures will be used, the salient components of which are described below.

4.3.1.1 BACKGROUND TRAFFIC GROWTH

Traffic-volume data compiled by MassDOT from permanent count stations and historic traffic counts in the area were reviewed in order to determine general background traffic growth trends. Based on a review of this data, it was determined that traffic volumes within the study area have generally declined over the past several years. In order to provide a conservative (high) analysis scenario and a prudent planning condition for the Project, a 0.5 percent per year compounded annual background traffic growth rate will be used in order to account for future traffic growth and presently unforeseen development within the study area.

4.3.1.2 BACKGROUND PROJECTS

The cities of Everett, Boston, Cambridge, Chelsea, Medford, Revere, and Somerville were contacted in order to obtain information on specific development projects by others that may add traffic to the study area in excess of the background traffic growth rate. In addition, a review of recent filings for projects with the MEPA Office and the Boston Redevelopment Authority (BRA) project database was also completed. The background projects are shown in Figure 4-29. Traffic volumes for the following specific development projects by others are included in the future traffic volume projections (No-Build and Build):

EVERETT

River Green Technology Park, Air Force Road– This project consists of a 500,000 ± sf mixed-use industrial redevelopment that will encompass 325,000 ± sf of light industrial space, 155,000 ± sf of research and development space and 25,000 ± sf of office space to be located off Air Force Road in Everett. The trips generated by this project were distributed to the study area intersections.

Parkside Lofts, 59 Waters Avenue– This project consists of the development of a 190 unit residential apartment community to be located at 59 WatersAvenue in Everett. The trips generated by this project were distributed to the study area intersections.

Batch Yard Lofts, Charlton Street– This project consists of the development of a 329 unit residential apartment community to be located off Charlton Street in Everett. The trips generated by this project were distributed to the study area intersections.

Everett High School Redevelopment, Broadway– The proposed project will entail the redevelopment of the former Everett High School to encompass a 325,000 ± sf of mixed-use development including a wellness center. The trips generated by this project were distributed to the study area intersections.

CHELSEA

Beech Street/Carter Street– The City of Chelsea was recently approached regarding a 152-room, full-service hotel located at the corner of Beech Street and Carter Street. The trips generated by this project were distributed to the study area intersections.

Maple Street/Spruce Street/Six Street– This project consists of the development of a 230-unit apartment building located on the corner of Maple Street, Spruce Street, and Six Street in Chelsea. The trips generated by this project were distributed to the study area intersections.

Heard Street/Maple Street–This project consists of the development of a 240-unit apartment building located at the corner of Heard Street and Maple Street in Chelsea. The trips generated by this project were distributed to the study area intersections.

All Suites Hotel, Eastern Avenue/Central Avenue–This project consists of the development of a 140-room All Suites hotel is proposed for the corner of Central Avenue and Eastern Avenue in Chelsea. The trips generated by this project were distributed to the study area intersections.

Federal Bureau of Investigation (FBI) Relocation Everett Avenue – The Boston FBI headquarters is planning to relocate from its downtown Boston location to Everett Avenue in Chelsea. The 250,000 sf office building has been approved by zoning and planning boards and is scheduled to have construction completed by 2015. The trips generated by this project were distributed to the study area intersections.

REVERE

Market Basket, Route 60– Located on Route 60 in the Northgate Mall in Revere, this 83,000 sf grocery store has completed construction, but has not opened yet. It was scheduled to open in September 2013, but due to issues within the Market Basket leadership, opening of the grocery store has been delayed until early 2014. The trips generated by this project were distributed to the study area intersections.

Waterfront Square, Ocean Avenue– Located adjacent to the Wonderland MBTA station in Revere, this multi-use development consisting of 343 residential units, 40,000 sf of retail space, and a 300 room hotel. Currently the garage, plaza, and walking bridge are under construction, with construction scheduled to be complete in 2018. The trips generated by this project were distributed to the study area intersections.

Revere Beach Boulevard–This project consists of the development of 145 residential units located on Revere Beach Boulevard. The trips generated by this project were distributed to the study area intersections.

Wonderland Ballroom Hotel, North Shore Road– The former Wonderland Ballroom, located close to the Wonderland MBTA station in Revere will become a 200-room hotel. The development is still in its planning and design stages with no construction dates released. The trips generated by this project were distributed to the study area intersections.

189 Broadway– Currently a vacant building off Route 107, 48 residential units and 1,600 sf of retail space is currently being permitted for this location. The trips generated by this project were distributed to the study area intersections.

Harley Davidson– Currently located on Revere Beach Parkway in Everett, Harley Davidson is planning to relocate to Revere. The Harley Davidson is planning to move into the currently vacant Johnie's Foodmaster's location in Linden Square. The new store will be 40,000 sf. The trips generated by this project were distributed to the study area intersections.

MEDFORD

River's Edge, 200 River's Edge Drive – This project recently filed a Notice of Project Change with MEPA to add 222 luxury apartments and 525,000 ± sf office space along the Malden River in Medford. The trips generated by this project were distributed to the study area intersections.

Station Landing Hotel, Station Landing – Located adjacent to Wellington Circle in Medford, Station Landing already consists of 165,000 sf of office space, 700 residential units, and 100,000 sf of retail/restaurant. This development will add a 190-room hotel on the property. The trips generated by this project were distributed to the study area intersections.

SOMERVILLE

Assembly Row, 1 Assembly Square Drive– This project, which is currently under construction, will consist of 1.75 million ± sf of new

office space; 500,000 ± sf of retail space, including a 12-screen movie theater and restaurants; 2,100 ± new apartments; and a six-acre park along the Mystic River in Somerville. The trips generated by this project were distributed to the study area intersections.

Inner Belt Medford Street– A former cold storage building has been proposed to be redeveloped into retail and rental apartments. The proposal was presented to the Somerville Planning Board on November 7, 2013. The trips generated by this project were distributed to the study area intersections.

BOSTON

Hood Business Park, 570 Rutherford Avenue, Boston (Charlestown) – Located off Rutherford Avenue in Charlestown, the Hood Business Park will consist of approximately 780,000 sf of office space, 380,000 sf of research and development space, and 11,000 sf of retail space. The trips generated by this project were distributed to the study area intersections.

There are a number of other small residential projects in Charlestown that were considered to be included in the background growth rate.

CAMBRIDGE

North Point, Monsignor O'Brien Highway (Route 28) – The North Point project is a mixed-use development located adjacent to the Gilmore Bridge in Cambridge. The development consists of 2,140,000 sf of office and research and development, 75,000 sf of retail, 4,000,000 sf of residential, and 90,000 sf of hotel. Currently, two low-rise residential buildings were constructed by the previous owner of the property. The new owners have just broken ground on a third building, which will be a high-rise residential building containing 355 apartments and 9,000 sf of ground floor retail. The remaining 17 mixed-use buildings will be constructed in phases in the coming years. The trips generated by this project were distributed to the study area intersections.

MALDEN

Greater Boston Ballpark, 100 Commercial Drive– This project would replace a 6.6 acre National Grid-owned site with a 6,000+ seat minor league baseball stadium in Malden. Trips generated by this project within the study area are reflected within the general background growth rate.

4.3.2 ROADWAYIMPROVEMENT PROJECTS BY OTHERS

Woods Memorial Bridge Replacement, Medford

The full replacement of the Woods Memorial Bridge on Revere Beach Parkway (Route 16) over the Malden River is currently proposed. The project would replace the two existing structurally deficient and structurally obsolete bridges. An Environmental Notification Form was filedwith the EOEEA on February 22, 2013.

Lower Broadway Master Plan, Everett

According to Everett's LBD Plan, Everett proposes several street network, bicycle, and pedestrian-level improvements in the Lower Broadway area. Everett also proposes to redesign Bow Street to discourage heavy vehicles from traveling through residential neighborhoods. Robin Street and Dexter Street would be redesigned to accommodate heavy vehicle traffic. Everett also proposes widened sidewalks along the east side of Bow Street, an 8-foot parking lane along the west side of Bow Street, and a 12-foot shared lane.

Everett proposes to redevelop the Lower Broadway area with a mixed-use development.Everett also proposes to extend the existing roadway network to provide access to the redevelopment area, including within the Project Site, providing access between Lower Broadway and Gateway Plaza, and a conceptual MBTA commuter rail station.From these future roadways, pedestrian connectionsto Gateway Plaza and surrounding recreational trails would be provided in the form of an underpass, an at-grade crossing, and/or a pedestrian bridge.

Sullivan Square/Rutherford Avenue Reconstruction Project, Boston

The City of Boston and MassDOT (Project #606226) have undertaken an extensive study of alternatives to improve traffic operations and safety at Sullivan Square, reconnect the Charlestown Neighborhood to the Mystic River waterfront, and improve pedestrian and bicycle access. The preferred alternative that was selected by the City of Boston after extensive public outreach and comment will entail the removal of the current Rutherford Avenue underpass and the Sullivan Square rotary, and replacement of these facilities with a landscaped surface street grid controlled by a coordinated traffic signal system. The project is at the pre-25% Design stage, but the City of Boston has engaged a consultant to design the improvements. Figure 4-30 shows the conceptual improvements.

Reconstruction and Widening on Route 1 from Route 60 to Route 99, Revere/Malden

MassDOT intends to improve a 2.4-mile length of U.S. Route 1 between Route 60 and Route 99 (Project #606512). The section of Route 1 currently consists of two travel lanes in each direction compared to three travel lanes in each direction north

of Route 99 and south of Route 60. The inconsistent cross-section creates a bottleneck. The project will remove the bottleneck, and reconfigure the Route 1/Salem Street and Route 1/Lynn Street interchanges. The project will also provide a new ramp from Route 1 South to Route 60 south (Squire Road) at Copeland Circle. The project is currently in the preliminary design phase, with construction estimated tostart in summer 2019.

Streetscape Improvements on Broadway, Somerville

MassDOT Project #605219 will narrow Broadway from four travel lanes to two travel lanes with bicycle lanes between Garfield Avenue in Somerville and the Boston City Line. The project will also widen sidewalks, improve crosswalks, bus stops, and roadway alignment to create pedestrian activity nodes. The project is currently under construction with an estimated completion date of Fall 2014.

Reconstruction of Washington Avenue from Revere Beach Parkway (Route 16) to Heard Street, Chelsea

MassDOT Project #605974 will reconstruct Washington Avenue from Revere Beach Parkway (Route 16)to Heard Street, including sidewalks, wheelchair ramps, and separated sewer and stormwater systems. The intersections of Washington Avenue at Forsyth Street/Gardner Street/Cary Avenue and Washington Avenue at Carter Street/County Road will be reconstructed. The project is under preliminary design with an expected construction start date of Fall 2017.

4.3.3 NO-BUILD TRAFFIC VOLUMES

All the No-Build traffic volumes have been developed using the process of adding background growth and project-specific trips where they can be identified, with one exception. The City of Boston has been working on the re-design of Sullivan Square and Rutherford Avenue (Route 99) since 2008. The City of Boston and its consultants have existing traffic counts from 2008, and from those, developed future volumes for the year 2030 by adding 5% growth to the traffic volumes. The City of Boston has been analyzing the weekday a.m. and p.m. peak hours in their study and conceptual planning.

Although the Project collected count data in recent months at Sullivan Square and surrounding intersections, the Project analysis has used the City of Boston's existing and No-Build p.m. peak hour volumes as the basis for the Project analysis. The Alford Street bridge has been under construction and the northbound underpass of Rutherford Avenue (Route 99) under Sullivan Square had been closed for safety reasons. It has only recently (November 2013) been reopened. These two items are likely to have altered vehicle travel patterns in the area. Therefore, the Friday p.m. peak hour counts were not used; instead, this analysis used the City of Boston's data for the weekday p.m. peak hour.

Because the City of Boston's studies to-date have not included any Saturday volumes or analysis, we reviewed the Saturday count data compared to the data collected for the Sullivan Square/Rutherford Avenue project and determined that in almost all cases, the Saturday volumes are lower. Therefore, the Saturday afternoon peak hour data collected for the Project was used. A 5% growth factor was applied to the Saturday data to yield the No-Build (2023) volumes.

Figure 4-31A and Figure 4-31B depict the No-Build (2023) Friday p.m. peak hour traffic volumes at intersections 1-17 and 18-26, respectively, located in Everett. Figure 4-32 shows the No-Build (2023) Friday p.m. peak hour traffic volumes at intersections 27-32, located in Chelsea and Revere. Figure 4-33 shows the No-Build (2023) Friday p.m. peak hour traffic volumes at intersections 33-44, located in Medford. Figure 4-34 shows the No-Build (2023) Friday p.m. peak hour traffic volumes at intersections 45-57, located in Somerville, Boston, and Cambridge. Figure 4-35A and Figure 4-35B depict the No-Build (2023) Saturday afternoonpeak hour traffic volumes at intersections 1-17 and 18-26, respectively, located in Everett. Figure 4-36 shows the No-Build (2023) Saturday afternoonpeak hour traffic volumes at intersections 27-32, located in Chelsea and Revere. Figure 4-37 shows the No-Build (2023) Saturday afternoonpeak hour traffic volumes at intersections 33-44, located in Medford. Figure 4-38 shows the No-Build (2023) Saturday afternoonpeak hour traffic volumes at intersections 45-57, located in Somerville, Boston, and Cambridge.

4.3.4 NO-BUILD TRAFFIC OPERATIONS

The sections that follow describe the capacity analysis of the roadways under the No-Build (2023) conditions.Table 4-11 shows the capacity analysis results for roadway segments for the No-Build conditions. Table 4-12 shows the intersection capacity analysis summary for the No-Build conditions. The analysis reports are provided in Appendix B.

Table 4-11, No-Build (2023) Conditions Roadway Segment CapacityAnalysis Summary

Roadway Segments	Weekday						Saturday					
	Volume (vph)	Density (pcphpl)	LOS	Volume (vph)	Density (pcphpl)	LOS	Volume (vph)	Density (pcphpl)	LOS	Volume (vph)	Density (pcphpl)	LOS
	Northbound			Southbound			Northbound			Southbound		
Broadway (Route 99), Everett north of Bowdoin Street	1358	17.2	B	1286	16.3	B	1154	14.3	B	1209	15.3	B
Broadway (Route 99), Everett south of Project Site	1544	19.5	C	1360	17.2	B	1177	14.9	B	1281	16.2	B
	Eastbound			Westbound			Eastbound			Westbound		
Route 16, Medford west of Santilli Circle	3230	27.2	D	3061	25.8	C	2379	20.1	C	2578	21.7	C
Route 16, Everett east of Sweetser Circle	2786	23.5	C	3279	27.6	D	2076	17.5	B	2821	23.8	C
Route 16, Everett west of Locust Street	2298	29.1	D	1617	13.6	B	1847	23.4	C	1571	13.2	B

Table 4-12, No-Build (2023) Conditions Intersection Capacity Analysis Summary

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
	LOS	Delay (sec/veh)	50% Queue Length	95% Queue Length	LOS	Delay (sec/veh)	50% Queue Length	95% Queue Length
1. (U) Horizon Way/ Broadway (Route 99)	-	-			-			
Horizon EB left | right	D	29.6	-	12	C	24.4	-	20
Broadway (Route 99) NB left	-	-	-	-	-	-	-	-
Broadway NB (Route 99) left/thru | thru	A	0.1	-	0	A	0.1	-	0
Broadway NB (Route 99) thru | thru | thru	-	-	-	-	-	-	-	-
Broadway (Route 99) SB thru | thru/right	A	0.0	-	0	A	0.0	-	0
2. (U) Mystic Street/Bow Street	-	-			-	-		
Bow NB thru/right	A	0.0	-	0	A	0.0	-	0
3. (U) Lynde Street/Broadway (Route 99)	-	-			-	-		
Broadway (Route 99) NB thru | thru/right	A	0.0	-	0	A	0.0	-	0
Broadway (Route 99) SB left/thru | thru	A	0.7	-	2	A	0.3	-	2
4. (U) Lynde Street/Bow Street	-	-			-	-		
Lynde EB left/thru	A	9.9	-	1	A	9.4	-	1
Bow NB thru/right	A	0.0	-	0	A	0.0	-	0
5. (U) Thorndike Street/Broadway (Route 99)	-	-			-	-		
Broadway (Route 99)NB thru | thru/right	A	0.0	-	0	A	0.0	-	0
Broadway (Route 99) SB left/thru | thru	A	0.4	-	4	A	0.3	-	2
6. (U) Thorndike Street/Bow Street	-	-			-	-		
Thorndike EB left/thru	A	10.0	-	4	A	9.5	-	2
Bow NB thru/right	A	0.0	-	0	A	0.0	-	0
7. (S) Beacham Street/Broadway (Route 99)	**F**	**191.3**			**D**	**40.6**		
McDonalds EB left/thru	C	33.1	21	50	C	25.1	19	64
McDonalds EB right	C	32.2	0	0	C	24.1	0	0
Beacham WB left/thru/right	F	172.3	~253	#428	D	44.3	114	#343

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Broadway (Route 99) NB left/thru | thru/right	F	374.0	~675	#813	E	58.4	263	#623
Broadway (Route 99) SB left/thru | thru/right	C	21.1	202	#714	C	24.8	175	#620
8. (S) Bowdoin Street/Broadway (Route 99)	**B**	**13.5**			**B**	**10.2**		
Bowdoin EB left/right	D	47.6	28	78	C	26.7	22	#120
Broadway (Route 99) NB left/thru | thru	B	18.6	257	m68	B	10.7	103	417
Broadway (Route 99) SB thru | thru/right	A	5.8	101	390	A	8.1	91	351
9. (U) Beacham Street/Robin Street	-	-			-	-		
Beacham EB left/thru/right	A	0.0	-	0	A	0.0	-	0
Beacham WB left/thru/right	A	4.7	-	18	A	4.0	-	12
Robin NB left/thru/right	C	15.3	-	37	B	12.4	-	10
Driveway SB left/thru	E	44.5	-	2	D	27.8	-	1
Driveway SB right	B	12.2	-	0	B	11.5	-	1
10a. (S) Revere Beach Parkway (Route 16)/Santilli Highway/Mystic View Road/Route 99 Connector (aka Santilli Circle)– West Intersection	**B**	**15.6**			**E**	**63.3**		
Revere Beach Parkway (Route 16) EB thru | thru | thru	B	10.5	220	267	A	8.5	113	142
Revere Beach Parkway (Route 16) EB bear right (to Circle)	C	28.6	353	#656	B	11.0	123	204
Revere Beach Parkway (Route 16) Route 16 WB thru | thru | thru	A	3.9	54	61	A	4.0	47	54
Rotary SB thru | thru/right	C	34.8	157	216	F	266.7	~438	#570
Rotary SB bear right	C	20.7	0	#195	A	1.6	0	0
10b. (S) Revere Beach Parkway (Route 16)/Santilli Highway/Mystic View Road/Route 99 Connector (aka Santilli Circle) – East Intersection	**E**	**60.9**			**D**	**49.8**		
Revere Beach Parkway (Route 16) EB thru | thru | thru	A	4.8	61	68	A	4.3	39	46
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	B	11.0	230	280	B	10.1	195	239

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Rotary NB thru | thru | thru	F	197.6	~393	#485	F	140.5	~343	#434
11. (U) Revere Beach Parkway (Route 16)/Broadway (Route 99)/Main Street (aka Sweetser Circle)	-	-			-	-		
Revere Beach Parkway (Route 16) Ramp EB	F	71.0	-	566	E	38.8	-	187
Broadway (Route 99) WB	F	111.4	-	827	F	75.5	-	572
Broadway (Route 99) NB	F	221.7	-	2223	D	29.2	-	153
Main SB	B	14.1	-	78	C	16.6	-	91
12. (S) 2nd Street/Corey Street/Broadway (Route 99)	**D**	**47.7**			**C**	**28.3**		
Corey EB left/thru/right	D	45.9	68	123	D	38.9	23	70
2nd WB left/thru/right	E	57.4	177	#312	D	36.0	105	228
Broadway (Route 99) NB left/thru/right	E	56.8	368	#784	C	25.0	182	#510
Broadway (Route 99) SB left/thru/right	C	31.7	276	m#446	C	26.5	220	#602
13. (S) Norwood Street/Chelsea Street/Broadway (Route 99)	**E**	**63.9**			**D**	**39.1**		
Norwood EB left	D	38.7	56	109	C	30.0	28	85
Norwood EB thru	D	49.2	122	#234	C	33.4	57	149
Norwood EB right	D	38.6	49	98	C	30.9	33	99
Chelsea WB left	D	48.3	126	197	C	34.5	79	191
Chelsea WB right	D	41.2	79	136	C	29.1	39	108
Broadway (Route 99) NB thru/right	B	15.7	97	m#619	C	28.2	176	#563
Broadway (Route 99) SB left/thru	F	144.8	~415	#758	E	57.2	208	#655
14. (U) Mansfield Street/Church Street/Broadway (Route 99)	-	-			-	-		
Mansfield WB left/thru/right	C	18.0	-	26	B	14.3	-	14
Broadway (Route 99) NB left/thru	A	1.4	-	4	A	1.4	-	4
Broadway (Route 99) SB thru/right	A	0.0	-	0	A	0.0	-	0
15. (S) High Street/Hancock Street/Broadway (Route 99)	**D**	**39.0**			**B**	**19.1**		
Hancock EB left/thru/right	D	39.2	159	#434	C	29.1	53	#275
Broadway NB left/thru/right	E	56.6	418	#762	C	21.6	125	452

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Broadway SB left/thru/right	B	16.6	247	m105	B	14.0	120	404
16. (S) Ferry Street/Broadway (Route 99)	**F**	**439.9**			**D**	**46.5**		
Ferry EB left/thru | thru/right	C	32.6	152	#345	E	59.8	103	#285
Ferry WB left	B	19.9	36	89	C	22.2	50	#145
Ferry WB thru	C	21.6	144	288	C	23.6	124	312
Ferry WB right	B	17.7	0	26	B	18.8	0	49
Broadway (Route 99) NB left/thru	F	722.5	~729	m#883	E	55.5	176	#549
Broadway (Route 99) NB right	C	27.7	137	m196	B	14.9	31	103
Broadway (Route 99) SB left/thru	F	1158.4	~475	#734	E	70.7	211	#625
Broadway (Route 99) SB right	B	19.6	25	63	B	13.7	15	57
17. (S) McKinley Street/Cameron Street/Broadway (Route 99)/Lynn Street	**E**	**66.8**			**C**	**24.2**		
Cameron EB left/bear left/thru	D	41.3	25	58	C	29.1	1	8
Cameron EB right	D	38.4	2	12	C	29.1	1	8
McKinley WB left/right/hard right	D	38.4	0	0	C	29.3	0	2
Broadway (Route 99) NB thru	C	22.9	180	#541	C	24.5	113	#324
Broadway (Route 99) NB bear right/right	C	20.4	113	#361	C	22.7	82	#243
Broadway (Route 99) SB hard left/left/thru	F	174.8	~365	#556	C	27.1	162	#478
Lynn SWB left/bear left/hard right	B	16.1	39	140	B	19.5	48	160
18. (S) Tileston Street/Oakes Street/Main Street	**D**	**41.2**			**B**	**13.1**		
Tileston EB left/thru/right	F	135.6	~140	#401	C	22.7	48	#163
Oakes WB left/thru/right	B	17.3	33	105	B	17.9	27	87
Main NB left	A	7.8	3	22	A	6.8	3	25
Main NB thru	B	14.8	111	#438	B	10.5	78	306
Main SB thru/right	B	14.3	103	#408	B	11.7	91	#398
19. (U) Waters Avenue /Linden Street/Main Street	-	-			-	-		
Waters EB left	F	131.2	-	27	E	45.6	-	10
Waters EB right	B	12.2	-	7	B	12.4	-	7

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Linden WB left/thru/right	F	583.2	-	403	F	236.5	-	254
Main NB left/thru	A	2.0	-	6	A	1.6	-	5
Main SB thru/right	A	0.0	-	0	A	0.0	-	0
20. (S) Peirce Avenue/Bellingham Avenue/Main Street	**B**	**19.8**			**B**	**15.5**		
Peirce EB left/thru/right	C	27.5	8	46	C	27.2	6	43
Bellingham WB left/thru/right	C	25.9	0	10	C	26.1	0	21
Main NB thru	C	22.7	228	#433	B	14.7	137	226
Main SB thru	B	14.2	145	232	B	13.2	128	205
21. (S) Revere Beach Parkway (Route 16)/Garvey Street/2nd Street	**E**	**67.4**			**C**	**23.9**		
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	F	106.8	~1277	#1349	C	31.1	663	#817
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	B	10.2	62	252	B	11.2	121	288
2nd NB left/thru/right	F	91.4	~436	#664	D	50.3	294	#432
2nd SB left/thru/right	C	33.3	104	165	C	27.9	68	114
22. (S) Revere Beach Parkway (Route 16)/Spring Street	**C**	**34.4**			**C**	**22.7**		
Revere Beach Parkway (Route 16) EB left	E	70.9	196	m172	E	70.5	157	m171
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	B	18.1	174	m#859	B	13.1	57	#765
Revere Beach Parkway (Route 16) WB left	E	61.2	101	m127	E	73.5	94	m132
Revere Beach Parkway (Route 16) thru | thru | thru/right	D	40.8	751	#1041	B	15.8	48	#970
Spring NB left/thru/right	F	92.9	196	#355	E	76.4	126	#252
Spring SB left/thru/right	E	55.9	97	177	E	64.0	122	#237
23. (S) Revere Beach Parkway (Route 16)/South Ferry Street	**B**	**12.5**			**A**	**8.5**		
Revere Beach Parkway (Route 16) EB left	D	45.4	0	m458	E	58.8	269	m365
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	A	0.1	0	109	A	0.1	0	28
Revere Beach Parkway (Route 16) WB thru | thru| thru/right	B	18.7	387	m628	A	7.5	86	763
24. (S) Revere Beach Parkway (Route 16)/Vine Street	**D**	**42.2**			**C**	**25.6**		

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	C	34.2	444	#1029	C	23.4	263	#638
Revere Beach Parkway (Route 16) WB left	E	72.0	26	m60	E	59.3	25	m49
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	C	21.5	94	573	B	18.8	368	581
Vine NB left/thru/right	F	181.6	~451	#662	E	69.0	163	#291
Vine SB left/thru/right	D	55.0	265	386	D	52.0	170	267
25. (S) Revere Beach Parkway (Route 16)/Vale Street	**B**	**19.2**			**B**	**11.7**		
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	B	15.3	250	m#359	A	9.6	234	125
Revere Beach Parkway (Route 16) WB left	E	68.5	14	m16	D	53.1	23	m33
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	B	15.3	316	m183	A	8.0	140	m249
Vale NB left/thru/right	E	72.1	258	347	E	57.2	75	150
26. (S) Revere Beach Parkway (Route 16)/Everett Avenue	**E**	**67.4**			**D**	**48.8**		
Revere Beach Parkway (Route 16) EB left	F	143.6	~280	#467	E	72.7	179	#307
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	D	40.1	355	#1061	C	29.5	267	#719
Revere Beach Parkway (Route 16) WB left	E	56.5	79	128	D	42.6	79	139
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	D	48.1	325	#770	D	40.2	287	#675
Everett NB left	F	217.2	~441	#645	F	208.2	~280	#448
Everett NB thru/right	D	54.2	410	#557	D	48.3	223	325
Everett SB left	F	348.1	~132	#257	E	71.5	63	#152
Everett SB thru/right	D	40.2	186	271	D	41.5	142	218
27. (S) William Street/ Chestnut Street	**C**	**21.9**			**B**	**14.2**		
Chestnut EB left/thru/right	C	21.5	102	174	C	20.4	87	152
Williams NB thru/right	B	19.1	260	#491	B	14.2	199	312
Williams SB left/thru	C	26.1	187	#392	B	10.1	90	148
28. (S) Revere Beach Parkway (Route 16)/Union Street	**A**	**9.8**			**A**	**8.2**		
Revere Beach Parkway (Route 16) EB thru | thru | thru	B	10.8	425	m578	A	8.3	55	442

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Revere Beach Parkway (Route 16) WB thru | thru | thru	A	6.0	242	m191	A	6.0	183	m137
Revere Beach Parkway (Route 16) WB bear right	B	15.7	32	m37	B	13.1	18	m19
Union SEB left | left	C	30.2	30	54	C	25.1	25	47
Union SEB hard right	C	28.6	0	11	C	23.8	0	10
29. (S) Revere Beach Parkway (Route 16)/Washington Street	**F**	**89.2**			**F**	**98.0**		
Revere Beach Parkway (Route 16) EB left	F	107.6	~286	#487	F	150.1	~215	#378
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	F	119.2	~653	#828	F	113.2	~526	#722
Revere Beach Parkway (Route 16) WB left	F	87.0	127	m180	E	66.1	70	m85
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	E	74.4	~518	m#609	F	104.3	~527	m#575
Washington NB left/thru/right	D	42.0	233	#591	C	31.4	171	#489
Washington SB left/thru	D	36.5	181	#456	C	27.8	118	#319
Washington SB right	C	33.0	122	259	C	26.0	73	181
30. (S) Revere Beach Parkway (Route 16)/Webster Avenue	**F**	**110.1**			**F**	**81.2**		
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	F	135.6	~358	m#953	D	42.1	259	m#663
Revere Beach Parkway (Route 16) WB left	F	177.6	~400	#602	F	370.5	~393	#580
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	C	25.5	393	#750	C	24.0	385	#830
Webster NB left**	F	144.2	~181	#356	F	203.2	~249	#435
Webster NB thru/right	D	53.9	423	571	D	45.4	274	391
Webster SB left**	F	780.8	~283	#441	F	359.1	~225	#378
Webster SB thru/right	E	68.0	301	#454	F	98.9	250	#446
31. (U) Revere Beach Parkway (Route 16)/U.S. Route 1 Interchange* **	-	-			-	-		
32a. (S) Beach Street/Everett Street/Route 1A/Route 16/Route 60 (aka Bell Circle) – East Intersection	**E**	**66.1**			**E**	**63.0**		
Beach WB right | right	D	41.1	104	#273	D	54.1	164	#351
NB Rotary thru | thru (continue in rotary)	B	14.4	0	m0	B	14.5	0	m0

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
NB Rotary right | right (onto Beach EB)	F	93.4	121	m43	F	84.2	63	m36
32b. (S) Beach Street/Everett Street/Route 1A/Route 16/Route 60 (aka Bell Circle) – West Intersection	**A**	**0.4**			**A**	**0.3**		
Beach EB right	A	0.5	0	0	A	0.3	0	0
Rotary SB thru | thru (cont in rotary)	A	0.4	5	m6	A	0.3	4	m4
Rotary SB right (onto Beach WB)	A	0.4	0	m0	A	0.2	0	m0
32c. (S) Beach Street/Everett Street/Route 1A/Route 16/Route 60 (aka Bell Circle) – North Intersection	**C**	**22.7**			**B**	**20.0**		
Rotary WB thru | thru	D	35.9	476	m#632	C	29.8	452	m511
Rotary WB right	B	15.7	90	m113	B	14.9	97	m118
Route 60 NB thru | thru	A	0.1	0	m0	A	0.1	0	m0
Route 60 SB thru | thru	C	27.7	256	328	C	28.4	277	353
Route 60 SB right (onto Rotary)	C	29.1	181	303	C	22.7	74	148
32d. (S) Beach Street/Everett Street/Route 1A/Route 16/Route 60 (aka Bell Circle) – South Intersection	**F**	**111.4**			**F**	**85.6**		
Rotary EB thru | thru	D	37.1	205	#325	C	26.1	130	195
Rotary EB right | right (onto 1A SB)	C	26.7	209	#398	D	39.8	173	#578
Route 1A NB right | right (towards rotary)	B	19.0	176	240	B	18.0	140	198
Route 60 SB thru | thru	A	5.3	67	75	A	6.0	74	81
Route 60 NEB thru | thru/right	F	269.8	~929	#1065	F	205.6	~790	#925
33. (S) Fellsway West (Route 28)/Fulton Street	**D**	**39.6**			**C**	**21.6**		
Fellsway West (Route 28) EB left	D	47.6	67	159	D	40.3	30	96
Fellsway West (Route 28) EB thru | thru	D	38.7	365	#850	B	15.8	104	310
Fellsway West (Route 28) EB right	B	18.5	0	0	B	12.4	0	0
Fellsway West (Route 28) WB left	D	48.0	69	165	D	41.5	40	119
Fellsway West (Route 28) WB thru | thru/right	D	39.6	370	#867	B	17.4	158	450

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Fulton NB left/thru/right	D	37.2	156	#407	C	33.4	56	154
Fulton SB left/thru/right	D	42.8	100	#317	D	42.0	84	220
34. (S) Fellsway West (Route 28)/Salem Street (Route 60)	**D**	**53.6**			**D**	**35.1**		
Fellsway West (Route 28) EB left	E	68.3	169	#468	D	50.3	132	#363
Fellsway West (Route 28) EB thru | thru/right	D	38.2	308	#752	C	25.1	112	258
Fellsway West (Route 28) WB left	D	52.7	106	#261	D	52.6	103	#247
Fellsway West (Route 28) WB thru | thru	D	50.1	324	#729	C	30.8	167	344
Fellsway West (Route 28) WB right	C	23.9	0	0	C	23.5	0	0
Salem (Route 60) NB left/thru | thru/right	F	97.8	~199	#492	D	38.0	139	#327
Salem (Route 60) SB left/thru | thru/right	D	36.9	150	#345	D	35.2	140	#305
35. (S) Central Avenue/Medford Street/ Fellsway (Route 28)	**F**	**162.3**			**D**	**44.7**		
Central EB left/thru/right	E	58.2	240	362	D	49.7	141	242
Medford WB left/thru	E	60.2	218	335	D	51.1	163	271
Medford WB right	D	39.1	0	66	D	36.4	0	54
Fellsway (Route 28) NB left	E	66.8	105	#214	D	53.0	76	155
Fellsway (Route 28) NB thru | thru	F	295.4	~804	#1035	D	48.7	298	#520
Fellsway (Route 28) NB right	C	33.1	0	0	C	28.4	0	0
Fellsway (Route 28) SB left	F	188.7	~341	#578	E	60.5	171	#378
Fellsway (Route 28) SB thru | thru/right	F	86.6	~547	#763	C	28.7	167	280
36. (S) Riverside Avenue/Fellsway (Route 28)	**D**	**41.2**			**C**	**33.5**		
Riverside EB left	F	99.2	168	#543	D	52.8	134	#463
Riverside EB thru*	D	36.0	165	#479	-	-	-	-
Riverside EB right*	C	28.6	37	143	-	-	-	-
Riverside EB thru/right*	-	-	-	-	D	47.1	184	#603
Riverside WB left	C	29.9	23	88	C	32.4	19	#95
Riverside WB thru/right	C	29.2	82	224	C	28.5	63	190
Fellsway (Route 28) NB left	D	51.4	101	#295	E	55.6	83	#230

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Fellsway (Route 28) NB thru | thru | thru/right	C	34.5	235	#647	C	21.2	105	248
Fellsway (Route 28) SB left	D	48.8	70	175	D	48.3	23	79
Fellsway (Route 28) SB thru | thru | thru/right	D	37.4	225	#558	C	26.9	109	260
37. (U) I-93 Southbound Off-ramp/Mystic Valley Parkway (Route 16) Southbound Connector* **	-	-			-	-		
38. (S) Harvard Street/Mystic Avenue (Route 38)	**E**	**72.6**			**E**	**55.4**		
Harvard EB left/thru | thru/right	D	44.6	273	344	D	41.2	220	283
Mystic Valley Parkway (Route 16) WB left	D	54.3	342	#529	D	49.1	333	#508
Mystic Valley Parkway (Route 16) WB thru	E	65.3	421	#643	E	69.2	429	#658
Mystic Valley Parkway (Route 16) WB right	D	42.8	128	198	D	38.9	111	175
Mystic (Route 38) NB left	E	70.5	74	#155	E	66.4	50	99
Mystic (Route 38) NB thru | thru/right	F	95.5	~302	#429	D	44.3	90	142
Mystic (Route 38) SB left	F	262.8	~205	#357	F	169.3	~147	#287
Mystic (Route 38) SB thru | thru/right	D	42.8	96	140	D	40.5	86	127
39. (S) Harvard Street/Mystic Valley Parkway (Route 16)/Mystic Valley Parkway (Route 16) Southbound Connector	**E**	**72.1**			**D**	**38.1**		
Mystic Valley Parkway (Route 16) EB thru | thru	B	13.9	211	m219	B	12.0	141	m163
Mystic Valley Parkway (Route 16) WB thru | thru	B	14.5	233	284	B	14.5	231	282
Mystic Valley (Route 16) SB left | left	F	169.2	~701	#837	E	78.0	~476	#624
Mystic Valley (Route 16) SB right	D	38.6	218	341	D	35.8	184	293
40. (S) Mystic Valley Parkway (Route 16)/Locust Street	**C**	**22.9**			**F**	**91.8**		
Mystic Valley Parkway (Route 16) EB left | left	D	47.5	159	218	F	823.3	~221	#328
Mystic Valley Parkway (Route 16) EB thru | thru	B	13.5	444	728	B	11.6	345	480
Mystic Valley Parkway (Route 16) WB thru | thru | thru	C	20.3	253	390	C	28.5	300	376
Locust SB left	D	51.1	157	241	D	54.8	204	302

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Locust SB right | right	D	38.4	0	39	D	37.4	0	40
41. (S) Mystic Valley Parkway (Route 16)/Commercial Street	**B**	**11.9**			**A**	**8.2**		
Mystic Valley Parkway (Route 16) EB left	D	43.4	50	97	D	41.4	32	70
Mystic Valley Parkway (Route 16) EB thru | thru	A	7.8	287	468	A	4.3	170	260
Mystic Valley Parkway (Route 16) WB thru | thru	B	13.4	318	504	A	9.0	225	344
Mystic Valley Parkway (Route 16) WB right	A	7.7	35	84	A	5.3	13	37
Commercial SB left	D	39.7	43	87	D	41.0	27	62
Commercial SB right	D	36.4	0	42	D	38.5	0	44
42a. (S) Mystic Valley/Revere Beach Parkway (Route 16)/Fellsway (Route 28)/ Middlesex Avenue (aka Wellington Circle) – West Intersection	**F**	**88.6**			**E**	**77.6**		
Mystic Valley Parkway (Route 16) EB thru | thru | thru | thru | thru/right	F	102.8	~405	#472	D	38.4	235	273
Mystic Valley Parkway (Route 16) WB left | left | left	F	102.8	~355	m#419	F	170.0	~451	#546
Mystic Valley Parkway (Route 16) WB thru | thru	C	22.8	290	m353	B	14.1	162	234
Fellsway (Route 28) SB left | left	F	285.1	~296	#407	F	152.9	~208	#311
Fellsway (Route 28) SB thru | thru | thru/right	E	64.3	136	#208	F	97.7	~175	#257
Middlesex SWB left | left | left/bear right	B	16.1	14	17	B	16.6	15	#24
Middlesex SWB bear right	B	14.5	6	m12	B	17.2	10	m12
42b. (S) Mystic Valley/Revere Beach Parkway (Route 16)/Fellsway (Route 28)/ Middlesex Avenue (aka Wellington Circle) – East Intersection	**E**	**74.4**			**C**	**29.0**		
Mystic Valley Parkway (Route 16) EB left | left	D	47.1	128	m110	D	47.5	111	m123
Mystic Valley Parkway (Route 16) EB thru | thru | thru | thru	F	103.4	~554	m#171	B	18.2	146	m160
Mystic Valley Parkway (Route 16) WB thru | thru | thru | thru | thru	C	33.4	392	438	C	30.5	367	410

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Mystic Valley Parkway (Route 16) WB right	E	79.3	~474	#701	D	40.8	305	#515
Fellsway (Route 28) NB left	E	61.4	318	#536	C	32.8	157	247
Fellsway (Route 28) NB left/ thru | thru	F	97.9	~468	#606	C	30.4	162	219
Fellsway (Route 28) NB bear right	F	203.0	~558	#775	E	55.4	275	#461
Fellsway (Route 28) NB right | right	C	25.4	380	505	B	19.5	287	378
42c. (S) Mystic Valley/Revere Beach Parkway (Route 16)/Fellsway (Route 28)/ Middlesex Avenue (aka Wellington Circle) – North Intersection	**B**	**16.8**			**C**	**22.0**		
Fellsway (Route 28) NB thru | thru | thru	A	7.9	230	m187	A	7.2	121	m143
Middlesex SWB thru | thru | thru | thru/right	D	36.8	118	151	D	38.5	140	177
43. (U) Revere Beach Parkway (Route 16) Eastbound/River's Edge Drive Ramps* **	-	-			-	-		
44. (U) Revere Beach Parkway (Route 16) Westbound/River's Edge Drive Ramps* **	-	-			-	-		
45. (S) I-93 Ramps/Mystic Avenue (Route 38)	**F**	**122.7**			**B**	**19.2**		
I-93 SB off-ramp WB left | left	F	153.9	~396	#519	C	33.2	95	139
I-93 SB off-ramp WB right	C	24.9	0	47	C	27.1	0	26
Mystic Ave (Route 38) NB thru | thru/right	F	154.3	~601	#796	B	18.7	113	240
Mystic Ave (Route 38) SB left	C	31.7	85	160	B	18.2	56	144
Mystic Ave (Route 38) SB thru | thru	A	8.5	56	79	A	5.2	30	56
46. (S) I-93 NB Off-ramp/McGrath Highway (Route 28)	**F**	**191.3**			**D**	**52.5**		
I-93 NB off-ramp WB thru | thru | thru	D	40.3	297	350	D	35.1	189	230
Fellsway (Route 28) SB bear left | bear left	D	46.3	376	460	D	44.9	381	465
Fellsway (Route 28) SB thru | thru/right	F	352.0	~1229	#1369	E	70.2	~523	#676
47a. (S) Mystic Avenue (Route 38)/McGrath Highway (Route 28)	**E**	**71.8**			**C**	**24.3**		

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Mystic (Route 38) EB thru | thru/right	E	66.8	468	#626	D	38.9	257	326
Mystic (Route 38) EB right	D	38.4	54	191	C	32.3	0	73
Mystic (Route 38) WB thru | thru	C	32.0	455	m322	C	22.6	213	269
McGrath (Route 28) SB left	B	14.2	36	m22	B	12.2	23	m23
McGrath (Route 28) SB thru | thru	F	121.8	~752	m71	B	11.9	65	m65
47b. (S) Mystic Avenue (Route 38)/McGrath Highway (Route 28)	**F**	**126.1**			**C**	**31.5**		
Mystic (Route 38) EB thru | thru	A	1.3	17	m18	A	1.2	11	13
McGrath (Route 28) NB left | left	F	287.1	~527	#657	E	60.3	187	246
McGrath (Route 28) NB right | right	D	46.6	20	64	D	46.5	0	47
48. (U) Mystic Avenue (Route 38)/I-93 Southbound On-ramp Diverge*	-	-			-	-		
49. (S) Broadway/McGrath Highway (Route 28)	**F**	**145.6**			**D**	**45.3**		
Broadway EB left	F	94.7	253	#460	E	58.4	217	#381
Broadway EB left/thru | thru | thru	D	50.9	202	253	D	39.0	130	179
Broadway EB right	C	32.6	38	77	C	26.0	2	28
Broadway WB left	D	54.3	118	196	D	50.2	82	146
Broadway WB left/thru | thru	E	60.0	155	#224	D	48.5	85	128
Broadway WB right	D	39.4	151	233	D	36.7	100	163
McGrath (Route 28) NB left	F	88.2	130	#262	E	69.6	113	#237
McGrath (Route 28) NB thru | thru | thru/right	F	215.7	~842	#938	D	42.8	318	#430
McGrath (Route 28) SB left	E	79.0	118	#233	E	70.5	118	#247
McGrath (Route 28) SB thru | thru | thru/right	F	166.7	~705	#801	D	43.9	324	#442
50. (U) Mystic Avenue (Route 38)/I-93 Northbound On-ramp Diverge*	-	-			-	-		
51. (S) Dexter Street/Alford Street (Route 99)	**B**	**11.8**			**A**	**8.6**		
Driveway EB left/thru/right								
Dexter WB left/thru/right	D	35.7	127	197	C	28.8	98	168

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Alford (Route 99) NB left/thru | thru/right	A	9.9	246	385	A	6.4	128	225
Alford (Route 99) SB left/thru | thru/right	A	9.3	202	322	A	6.9	147	259
52. (S) Cambridge Street/I-93 Northbound Off-ramp	**C**	**24.8**			**C**	**22.8**		
Cambridge Street EB thru | thru	B	12.9	98	148	B	14.1	109	171
Cambridge Street WB thru | thru	B	13.2	132	171	B	13.6	103	212
I-93 NB ramp NB left	D	36.9	269	334	C	32.9	242	285
I-93 NB ramp NB right	D	51.3	313	398	D	42.8	295	353
53a. (S) Main Street/Maffa Way/Cambridge Street/Alford Street (aka Sullivan Square)	**D**	**36.2**			**D**	**50.3**		
Maffa EB left/thru | thru/right	D	44.8	236	565	E	58.9	259	#385
Maffa WB left	B	16.8	38	m100	E	60.4	263	#406
Maffa WB right	C	27.1	66	m204	B	19.3	0	m2
Cambridge NB thru	E	65.0	240	274	D	46.5	497	615
Cambridge NB right	A	6.5	29	88	C	28.5	155	278
Alford SB left/thru	C	22.2	85	87	D	36.1	17	m40
53b. (S) Mishawum Street/Rutherford Avenue (Route 99)	**D**	**35.6**			**C**	**34.9**		
Hood BP North EB thru	D	35.4	88	151	E	60.8	106	174
Hood BP North EB right	D	40.0	59	#200	D	52.4	169	#354
Mishawum WB left	F	113.9	~148	#293	D	43.0	17	41
Mishawum WB thru/right	D	35.0	82	142	D	38.6	17	44
Rutherford (Route 99) NB left	F	113.1	~163	#313	E	60.2	127	203
Rutherford (Route 99) NB thru | thru/right	C	27.3	423	534	B	19.8	289	382
Rutherford (Route 99) SB left	D	38.8	26	60	-	-	-	-
Rutherford (Route 99) SB thru | thru | thru/right	C	23.2	361	430	C	34.1	282	380
53c. (S) Maffa Way/Rutherford Avenue (Route 99)	**C**	**29.5**			**B**	**18.3**		
Maffa EB left | left	D	39.7	343	401	C	31.8	93	m75
Maffa EB right	C	27.3	427	m563	B	15.5	59	m66

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Rutherford NB left	E	74.3	269	#447	C	32.1	6	m11
Rutherford NB thru | thru	D	39.6	384	473	C	30.9	444	513
Rutherford SB thru | thru | thru/right	A	6.4	49	38	A	3.4	0	328
53d. (S) Main Street/Rutherford Avenue (Route 99)	**E**	**59.2**			**E**	**55.4**		
Main EB left	E	74.6	106	m#196	E	63.2	97	m#168
Main EB thru/right	C	27.5	9	m13	D	45.6	143	220
Main WB left/thru | thru/right	F	173.4	~303	#424	F	123.3	~341	#469
Rutherford NB left	F	123.0	~360	m#505	F	104.1	~269	#457
Rutherford NB thru | thru | thru/right	C	28.2	214	275	C	24.9	120	250
Rutherford SB left	D	50.6	116	197	D	39.3	45	90
Rutherford SB thru | thru | thru/right	C	27.3	389	452	C	31.3	218	271
53e. (S) Main Street/Alford Street	**C**	**27.4**			**C**	**33.7**		
Main WB left/thru | thru/right	A	10.0	88	m211	C	22.0	156	m148
Alford NB left	D	46.2	346	m455	C	34.7	114	m114
Alford NB left/thru/right	D	43.6	317	m426	D	44.9	210	m207
Alford SB left/thru/right	E	57.3	48	102	D	53.5	7	84
53f. (S) West Street/Rutherford Avenue (Route 99)	**A**	**6.3**			**A**	**9.5**		
West EB left	D	52.1	84	m126	E	57.1	129	194
West EB right	E	57.6	1	m1	D	44.3	0	12
Rutherford NB left/thru | thru	A	4.1	77	m83	A	8.0	333	m522
Rutherford SB thru | thru/right	A	5.6	228	357	A	4.9	149	240
54. (S) Austin Street/New Rutherford Avenue(Route 99)	**C**	**34.4**			**C**	**30.7**		
Gilmore Bridge EB left | left	C	33.4	276	359	C	28.1	118	146
Gilmore Bridge EB thru	C	32.4	230	343	C	28.5	138	190
Gilmore Bridge EB right	A	0.8	0	0	C	27.7	0	63
Austin Street WB left	D	47.1	81	141	D	50.8	66	119
Austin Street WB thru/right	E	73.2	186	#328	E	62.8	112	185
New Rutherford NB (Route 99) left	E	56.1	90	154	D	48.7	102	110

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
New Rutherford (Route 99) NB thru/right	F	117.8	52	93	C	22.8	7	13
New Rutherford (Route 99) SB left	D	48.6	43	86	D	36.5	21	55
New Rutherford (Route 99) SB thru | thru	D	40.5	48	81	D	39.7	11	31
New Rutherford (Route 99) SB right	B	17.4	224	360	B	18.3	243	407
55. (S) New Rutherford Avenue (Route 99)/Route 1 Ramps	**C**	**34.2**			**B**	**17.7**		
New Rutherford (Route 99) EB thru | thru	C	24.8	515	#759	B	13.9	305	398
New Rutherford (Route 99) EB right	D	54.4	626	#1011	A	5.1	57	109
New Rutherford (Route 99) WB left| left	D	36.5	135	151	C	34.4	127	167
New Rutherford (Route 99) WB thru | thru	C	21.9	343	415	A	6.3	24	156
Route 1 ramp NB left | left	D	52.3	57	90	E	55.6	80	121
Route 1 ramp NB right | right	C	26.6	59	81	C	31.5	46	73
56. (S) New Rutherford Avenue (Route 99)/Chelsea Street (City Square)	**D**	**39.7**			**C**	**32.8**		
New Rutherford (Route 99) EB left	D	46.1	58	m72	E	58.8	122	185
New Rutherford EB thru | thru	C	27.9	396	502	B	15.1	237	342
New Rutherford EB right	F	81.7	320	494	D	53.8	185	310
New Rutherford WB thru | thru	C	30.0	393	#561	B	17.9	141	232
New Rutherford WB right	C	23.4	48	154	B	17.6	0	64
Chelsea SB left	D	50.8	345	472	D	51.6	202	274
Chelsea SB thru	D	35.3	241	332	D	52.6	219	293
Chelsea SB right	C	28.6	0	57	D	38.8	0	56
57. (S) Monsignor O'Brien Highway (Route 28)/Edwin H. Land Boulevard/Charlestown Avenue	**F**	**274.8**			**F**	**131.0**		
Monsignor O'Brien Highway (Route 28) EB left	F	453.2	~400	#586	F	163.5	~194	#350
Monsignor O'Brien Highway (Route 28) EB thru | thru | thru	D	40.1	193	238	D	39.9	185	230
Monsignor O'Brien Highway (Route 28) EB right	C	34.1	0	62	C	34.1	0	61

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Monsignor O'Brien Highway (Route 28) WB left	F	248.6	~365	#555	F	164.8	~276	#455
Monsignor O'Brien Highway (Route 28) WB thru | thru	D	39.6	247	314	D	38.0	215	277
Monsignor O'Brien Highway (Route 28) WB right	D	41.0	145	271	C	32.7	m41	104
Edwin H. Land NB left	F	859.3	~628	#836	F	111.4	~136	#278
Edwin H. Land NB thru | thru	F	766.4	~655	#786	F	486.5	~458	#583
Edwin H. Land NB right	F	81.7	84	#284	D	50.6	9	#136
Charlestown SB left/thru | thru/right	E	55.8	351	#476	E	55.4	350	#472

**de facto left-turn lane
(S) signalized intersection
(U) unsignalized intersection
m Volume for 95th percentile queue is metered by upstream signal.
~ Volume exceeds capacity. Queue is theoretically infinite. Queue shown is maximum after 2 cycles.
# 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.

The LOS of the signalized intersections in each city are summarized graphically. Figure 4-39A and Figure 4-39B depict the capacity analysis summaries for both Friday p.m. peak hour and Saturday afternoon peak hour under No-Build conditions at intersections 1-17 and 18-26, respectively, located in Everett. Figure 4-40 shows the capacity analysis summaries for both Friday p.m. peak hour and Saturday afternoon peak hour under No-Build conditions at intersections 27-32, located in Chelsea and Revere. Figure 4-41 shows the capacity analysis summaries for both Friday p.m. peak hour and Saturday afternoon peak hour existing conditions at intersections 33-44, located in Medford. Figure 4-42 shows the capacity analysis summaries for both Friday p.m. peak hour and Saturday afternoon peak hour existing conditions at intersections 45-57, located in Somerville, Boston, and Cambridge. The detailed results are tabulatedin Appendix B, and the detailed Synchro output is included in Appendix B. The results for each peak hour are described in the following sections.

4.3.4.1 FRIDAY P.M. PEAK HOUR NO-BUILD (2023) TRAFFIC OPERATIONS

Under No-Build (2023) Friday p.m. peak hour conditions, all of the study area intersections are found to operate at an acceptable overall LOS or an overall LOS consistent with Existing Conditions, with the exception of the following intersections.

EVERETT

10. At ***Santilli Circle - East Intersection***, the overall LOS worsens from LOS C to LOS E.

13. At ***Broadway/Norwood Street/Chelsea Street,*** the overall LOS worsens from LOS D to LOS E. The Broadway southbound approach worsens from LOS D to LOS F.

16. At ***Broadway/Ferry Street,*** the overall LOS worsens from LOS E to LOS F.

17. At ***Broadway/Lynn Street/McKinley Street/Cameron Street,*** the overall LOS worsens from LOS D to LOS E.

21. At ***Route 16/Second Street/Garvey Street,*** the overall LOS worsens from LOS D to LOS E. The Route 16 eastbound approach worsens from LOS D to LOS F.

26. At ***Route 16/Everett Avenue,*** the overall LOS worsens from LOS D to LOS E. The Everett Street southbound left-turn movement worsens from LOS E to LOS F.

CHELSEA

29. At ***Route 16/Washington Street,*** the overall LOS worsens from LOS D to LOS F. The Route 16 eastbound through and through/right-turn movements worsen from LOS E to LOS F. The Route 16 westbound through and through/right-turn movements worsen from LOS D to LOS E.

30. At Revere Beach Parkway (***Route 16)/Webster Avenue,*** the overall LOS and the Revere Beach Parkway (Route 16) eastbound approach worsen from LOS E to LOS F.

MEDFORD

39. At ***Mystic Valley Parkway/Route 16 SB Connector,*** the overall LOS worsens from LOS D to LOS E.

42. At ***Wellington Circle - East Intersection,*** the overall LOS worsens from LOS D to LOS E. The Route 16 eastbound through movement worsens from LOS C to LOS F. The Route 16 westbound right-turn movement worsens from LOS D to LOS E. The Route 28 northbound left-turn movement worsens from LOS D to LOS E. The Fellsway (Route 28) northbound left/through

movement worsens from LOS E to LOS F. At Wellington Circle - West Intersection, the overall LOS worsens from LOS D to LOS F. The Mystic Valley Parkway (Route 16) eastbound approach worsens from LOS D to LOS F. The Revere Beach Parkway (Route 16) westbound left-turn movement worsens from LOS E to LOS F. The Fellsway (Route 28) southbound through/right-turn movement worsens from LOS D to LOS E.

SOMERVILLE

47. At ***McGrath Highway (Route 28)/I-93 NB Off-ramp,*** the overall LOS worsens from LOS C to LOS E. The Mystic Avenue eastbound through and shared through/right-turn movements worsen from LOS D to LOS E. The McGrath Highway (Route 28) southbound through movement worsens from LOS B to LOS F.

BOSTON

53d. The new intersection of ***Rutherford Avenue/Main Street (Sullivan Square)*** is expected to operate at LOS E. This intersection will be created as Sullivan Square is redeveloped in the future. The No-Build analysis presumes that the City of Boston's conceptual plans to improve Sullivan Square, shown in Figure 4-30, are in place. The Main Street eastbound left-turn is expected to operate at LOS E due to the heavy volume during the peak hour and a low green time to cycle length ratio for this protected movement. The Main Street westbound approach is expected to operate at LOS F due to the heavy volumes during the peak hour. The Rutherford Avenue northbound left-turn lane is expected to operate at LOS F due to the heavy volume during the peak hour for this protected movement. This intersection will go through a detailed design process that should ultimately consider the effects of all proposed development that will generate traffic through Sullivan Square. Traffic patterns at this intersection will be dependent upon operations at the adjacent intersections proposed as part of the Sullivan Square redevelopment plan.

4.3.4.2 SATURDAYAFTERNOON PEAK HOUR NO-BUILD (2023) TRAFFIC OPERATIONS

Under No-Build (2023) Saturday afternoon peak hour conditions, all of the study area intersections are found to operate at an acceptable overall LOS or an overall LOS consistent with Existing Conditions, with the exception of the following intersections:

EVERETT

10. At ***Santilli Circle - West Intersection,*** the overall LOS worsens from LOS D to LOS E.

CHELSEA

29. At ***Route 16/Washington Street,*** the overall LOS worsens from LOS E to LOS F. The Route 16 eastbound and the Route 16 westbound through and through/right-turn movements both worsen from LOS E to LOS F.

30. At ***Route 16/Webster Avenue,*** the overall LOS worsens from LOS E to LOS F.

REVERE

32. At ***Bell Circle - East Intersection,*** the overall LOS worsens from LOS D to LOS E. The Rotary northbound right-turn approach worsens from LOS E to LOS F. At Bell Circle – South Intersection, the overall LOS worsens from LOS E to LOS F.

MEDFORD

40. At ***Route 16/Locust Street,*** the overall LOS worsens from LOS C to LOS F. The Route 16 eastbound left-turn movement worsens from LOS D to LOS F.

42. At ***Wellington Circle – West Intersection,*** the overall LOS worsens from LOS D to LOS E. The Route 28 southbound through/right-turn movement worsens from LOS E to LOS F.

BOSTON

53d. The new intersection of ***Rutherford Avenue/Main Street (Sullivan Square)*** is expected to operate at LOS E. This intersection will be created as Sullivan Square is redeveloped in the future. The Main Street eastbound left-turn is expected to operate at LOS E due to the heavy volume during the peak hour and a low green time to cycle length ratio for this protected movement. The Main Street westbound approach is expected to operate at LOS F due to the heavy volume during the peak hour. The Rutherford Avenue northbound left-turn lane is expected to operate at LOS F due to the heavy volume during the peak hour for this protected movement. This intersection will go through a detailed design process that should ultimately consider the effects of all proposed development that will generate traffic through Sullivan Square.

Traffic patterns at this intersection will be dependent upon operations at the adjacent intersections proposed as part of the Sullivan Square redevelopment plan.

4.3.5 PUBLIC TRANSPORTATIONIMPROVEMENTS BY OTHERS

Assembly Square Station

Construction is currently underway for the new Assembly Square MBTA Orange Line station, which would be located within the Assembly Square Mall along Mystic Avenue in Somerville. The station is expected to be completed in the fall of 2014.

New Commuter Rail Station, Newburyport/Rockport Line

According to its LBD Plan, the Everett is currently exploring adding a new stop on the existing commuter rail line that runs along the Gateway Center to the west of the Project Site. Such a potential new commuter rail station would servethe MBTA's Newburyport/Rockport line.

Green Line Extension

Construction is currently underway for the Green Line Extension, which will extend the MBTA Green Line northwest of Lechmere Station. The project will provide up to six additional MBTA Green Line stations, including Union Square, Washington Street, Gilman Street, Lowell Street, Ball Square, and College Avenue/Tufts University.

The project aims to provide new and better opportunities for travel within the region, address longstanding transportation inequities, reduce the number of vehicle trips, and support municipal plans for sustainable growth and development. The project will be completed in four phases. Phase 1, which includes the reconstruction and widening of the Harvard Street Rail Bridge in Medford, widening of the Medford Street Rail Bridge in Somerville, the demolition of 21 Water Street in Cambridge, construction of retaining walls, and relocation of MBTA Commuter Rail tracks, is currently underway, with expected completion infall 2014. The entire project is expected to be completed by July 2019.

4.4 BUILD CONDITIONS

4.4.1 SITE ACCESS AND CIRCULATION

4.4.1.1 PREFERRED ACCESS PLAN

The primary Project Site driveway will be designed and constructed as a signature entrance to the Project Site consisting of a four-lane boulevard (two lanes in each direction) with a landscaped island, marquee sign, period lighting, sidewalks, and

bicycle accommodations. Additional turning lanes will be provided for traffic exiting the Project Site at Lower Broadway (Route 99). The conceptual design of the primary driveway is shown in Figure 4-43A. Access to the Project Site will be provided by way of a boulevard-type driveway that will intersect the west side of Lower Broadway (Route 99) opposite Mystic Street and will be placed under traffic signal control.

An additional secondary access for service and deliveries will be developed for the Project that will intersect Lower Broadway (Route 99) north of the primary Project access. The secondary access is shown in Figure 4-43B. It is envisioned that the secondary driveway will also be placed under traffic signal control. The secondary access would primarily be used by trucks delivering goods and services to the loading docks of the Project, which will be located in the northwest corner of the Project. The secondary access could also be used by the employee shuttle service that will be provided between the Project Site and off-site employee parking. The routes for truck access are shown in Figure 4-44.

4.4.1.2 ALTERNATE ACCESS PLAN

The alternative conceptual design of the primary Project Site driveway is shown in Figure 4-45.In this configuration, the Project Site driveway would be located in approximately the same location as the existing Horizon Way. Additional turning lanes would be provided exiting the Project Site, and it is envisioned that the driveway would be signalized. The configuration of the driveway entrance does not impact the traffic operations analysis in any substantial way, as either location would be signalized.

4.4.1.3 LOWER BROADWAY (ROUTE 99) IMPROVEMENTS

Lower Broadway (Route 99) will be widened approaching the primary Project Site driveway to accommodate a right-turn lane entering the Project, bicycle lanes, and sidewalks, while maintaining two through travel lanes per direction. Left turns will be accommodated through the widening of Broadway (Route 99) northbound to accommodate dedicated left-turn lanes. The primary Project Site driveway will be placed under traffic signal control and will be interconnected and coordinated with the adjacent traffic signals along Lower Broadway (Route 99). The proposed configuration of Broadway (Route 99) in the vicinity of the Project Site is shown in Figure 4-46A, Figure 4-46B, and Figure 4-46C.

4.4.1.4 PARKING

There will be 2,909 parking spaces in an underground garage on-site, primarily for patron use, although a few spaces will be provided for employees. Most employees

will be required to park off-site and ride a shuttle bus to the Project Site. The Proponent plans to lease approximately 750 spaces in three off-site parking facilities.

4.4.1.5 WATER TRANSPORTATION SERVICE

The Project will also provide a water taxi/shuttle dock serving as a new stop for water transportation routes. The Project proposes to support an initial water ferry shuttle service to provide service with stops in Downtown (Long Wharf or Rowe's Wharf) and South Boston (World Trade Center), with potential for expansion to other Boston Inner Harbor locations if demand increases.

The Proponent has included a multi-purpose dock in the Project, with ADA and MAAB access, and associated navigational improvements needed to deliver ferry and water taxi passengers within a short walking distance of casino, hotel, and retail entrances.

While ferry service from Everett to central Inner Harbor sites appears to be generally feasible, passenger vessels would be required to have low clearance for passing under the Alford Street Bridge in its closed position (12 feet of clearance at current high tide), and ADA/MAAB vessel accessibility, as well as low wake and high maneuverability for the busy Inner Harbor routes. Of the commercial ferry vessels presently serving the harbor, only the lower capacity water taxis are currently able to clear the Alford Street bridge at all tide periods, so the water shuttle to Everett will require custom-built vessels.

The Project will also consider use of passenger or freight vessels during construction phases as a means of diverting some construction-related traffic from the roadway system. A construction phase ferry service would require either early construction of the permanent multi-purpose dock, and/or a temporary facility with greater capacity for handling construction materials.

4.4.1.6 MBTA MAINTENANCE FACILITY ACCESS

One of the MBTA's two subway maintenance facilities is located just north of the Project Site. The MBTA's Subway Main Repair Facility is one of two MBTA "backshops" available to support the needs of all MBTA divisions and departments. The Subway Shop primarily serves the train repair facilities ("carhouses") of the four MBTA Heavy and Light Rail Subway lines.

Under the preferred access alternative, the MBTA facilities would be accessed via the secondary access for the Project, located to the north of the Project Site. New internal roadway connections would be constructed for the MBTA's facility. At no time would access to the facilities be impaired. The approximate layout of the potential MBTA facility access is shownin Figure 4-44.

4.4.1.7 PEDESTRIAN AND BICYCLE IMPROVEMENTS

Subject to the approval of the DCR and the MBTA, a pedestrian and bicycle connection to the Project Site will be provided beneath the MBTA Commuter Rail and linking to existing trails in Gateway Park. The Project's river walk will also connect to the pedestrian and bicycle facilities along Broadway (Route 99). These improvements are intended to have a positive impact on the future Bay State Greenway, which is planned by the State and shown previously in Figure 4-15. Pedestrian and bicycle circulation on the Project Site is shown in Figure 4-47. The proposed connections the the existing trails in Gateway Park are shown in Figure 4-48.

4.4.2 TRIP GENERATION

The number of new trips generated by the Project is estimated in two different ways because of the types of land uses. For more regular land uses, such as hotel and retail, the rates in the Institute of Transportation Engineers' (ITE's) *Trip Generation, 9th edition* was used. For the gaming element of the Project, empirical data from other casino facilities was used to develop the trip rates. Detailed trip generation worksheets are included in Appendix B.

The Project will include the following major elements:

- Hotel - 500 rooms;
- Retail - 89,140 square feet;
- Food and Beverage - 69,365 square feet;
- Convention and Meeting Space -34,998 square feet;
- Spa and Gym - 13,110 square foot spa and gym; and
- Casino area – 167,880 square feet with 3,072 slot machines and 150 gaming tables (3,972 total gaming positions).

An on-site parking garage with 2,909 spaces will serve hotel guests, casino patrons, and visitors to the retail shops, restaurants, and nightclubs. Primary vehicular access will be provided at a new signalized intersection on Broadway (Route 99).

Time Periods

At gaming facilities, trip activity varies by month, day of week, and time of day. Based on available gaming data, visitation is typically highest on Fridays and Saturdays. After a review of recent traffic volume data on Broadway (Route 99) near the Project Site and hourly trip activity patterns at similar gaming facilities (discussed in more detail in the Gaming Land Uses section that follows), it is estimated that the Project's peak periods of travel activity will occur on a Friday and Saturday after 7:00 p.m. and will not overlap with the typical commuter peak hours. However, the highest combination of Project and roadway traffic is expected to occur on Fridays between 4:00 – 6:00 p.m. and Saturdays between 2:00 – 5:00 p.m.

For this transportation study, trip generation data has been summarized for daily conditions on a typical Friday and Saturday and for one peak hour during the periods listed above.

4.4.2.1 TRIP GENERATION RATES

The trip generation for the Project is based on statistics published by ITE and empirical trip rates obtained from similar gaming facilities.

Non-gaming Land Uses

Vehicle trip generation estimates for the Project's non-gaming components use rates derived from ITE's Trip Generation Manual. These ITE vehicle trip generation rates are used to estimate the number of "unadjusted" vehicle trips associated with the Project. Unadjusted trips reflect the expected number of trips if all trips are made by private automobile. In an urban setting like the Project Site in Everett, however, these "unadjusted" vehicle trips need to be "adjusted" to account for other travel options such as public transportation, water transportation, walk/bicycle, tour buses, and employee shuttles from remote parking facilities. An interim step of applying internal capture rates and pass-by rates further refine the trip generation estimates to reflect the particular characteristics of the development program and building site. Travel mode shares and rates for internal capture and pass-by trips are discussed in later sections.

The following ITE land use codes (LUCs) were used to estimate the unadjusted vehicle trips for the Project:

LUC 310 – Hotel - This land use code is defined as a place of lodging that provides sleeping accommodations and supporting facilities such as restaurants, cocktail lounges, meeting and banquet rooms, limited recreational facilities. Note that LUC 330 for Resort Hotel was also

reviewed for this analysis. Because LUC 310 yields a higher number of trips per room, it was chosen to be most conservative (highest impact). Calculation of the number of vehicle trips uses ITE's average rate per room for Friday p.m. peak hour trips and fitted curve rate for other periods.

LUC 820 – Shopping Center - A shopping center is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. A shopping center's composition is related to its market area in terms of size, location, and type of store. Calculations of the number of trips use ITE's fitted curve rate average rate per 1,000 sf.

LUC 925 – Drinking Place – A drinking place contains a bar, where alcoholic beverages and food are sold, and possibly some type of entertainment, such as music, television screens, video games, or pool tables. Calculation of the number of vehicle trips uses ITE's average rate per 1,000 sf for all time period periods.

Because patrons and employees will have different travel characteristics, particularly for the gaming component, the patron and employee trips are treated separately in the remaining steps of the trip generation process. Patrons will travel longer distances than employees and are more likely to drive. Most employees will live within a reasonable commuting distance and will use more public transportation services. By disaggregating total trips into patron/visitor trips and employee trips, the appropriate mode share adjustments can be made to each group.

The unadjusted vehicle trips were converted to person trips based on average vehicle occupancy (AVO) rates. From the most recent survey of national vehicle occupancy rates, an AVO of 2.2 persons/auto was adopted for non-gaming patrons (social/recreational category), and an AVO of 1.13 persons/auto was adopted for employees (work category).

Gaming Land Uses

The trip characteristics of the gaming component of the Project (inclusive of gaming-related retail and restaurant space to be located within the Project) were developed using empirical trip rates obtained from similar gaming facilities located in urban markets. Initial screening data (including traffic volume and demographic (population) information) was obtained for the following facilities:

- Casino de Montreal – Montreal, Quebec, Canada *

- Casino St. Charles - St. Louis, Missouri
- Hollywood Casino - Columbus, Ohio
- Resort World Casino at Aqueduct – Queens, New York *
- Rivers Casino – Pittsburgh, Pennsylvania
- Sugarhouse Casino – Philadelphia, Pennsylvania *

After review of data from all facilities, the three casinos identified above with an asterisk (*) were found to be most similar to the Project with respect to 1) market area and demographic base, 2) the number of gaming positions and resort amenities, and 3) proximity to available public transportation services.

Traffic volume data was collected at these selected facilities on a Friday and Saturday in June 2012 and April, May, June, or July 2013, along with resort information (i.e., number of gaming positions/tables and resort amenities provided) for each respective site.

It should be noted that each of the sites that were surveyed included gaming-related retail and restaurant space located within the casino, and each had an off-site or separate hotel. Daily and peak hour vehicle trips rates were developed based on trip rates derived from traffic counts conducted at the Casino de Montreal and at Resort World at Aqueduct over a continuous 24-hour period on both a Friday and Saturday in July 2013. From this data, the peak hour and associated traffic volume on a Friday and Saturday were identified for each facility and normalized to a number of unadjusted vehicle trips (patron and employees) per gaming position. The detailed traffic count data and calculated trips rates for each of the selected sites are shown in Table 4-13. To estimate the traffic characteristics of the Project's gaming component, the empirical trip rates derived from the comparable casinos were applied to the Project's 3,972 gaming positions.

Table 4-13, Comparison of Selected Gaming Facilities

Location	Gaming Positions		Peak Hour Vehicle Trips per Gaming Position			Public Transit Services	On-site Hotel?
				Friday	Saturday		
Sugarhouse Casino Philadelphia, PA	Slots Tables[b] Total	1,602 354 1,956	In Out Total	0.22 0.21 0.43	0.25 0.30 0.55	Subway	No
Casino de Montreal Montreal, QC, Canada	Slots Tables[a] Total	3,000 714 3,714	In Out Total	0.14 0.14 0.28	0.14 0.18 0.32	Subway	No
Resort World Casino at Aqueduct New York, NY	Slots Tables[a] Total	4,525 475 5,000	In Out Total	0.13 0.17 0.30	0.17 0.16 0.33	Subway[c]	No
			Estimated Peak Hour Vehicle Trips per Gaming Position				
Wynn Resort in Everett Everett, MA	Slots Tables[a] Total	3,072 900 3,972	In Out Total	0.14 0.15 0.29	0.16 0.17 0.33	Bus[d]	Yes[e]

aAssumes six gaming positions per gaming table including poker tables.

bElectronic gaming tables (i.e., one gaming position per table).

cIncludes three subway lines and four bus routes.

dIncludes eight bus routes.

eHotel trips calculated separately.

The Sugarhouse Casino rates were not used in developing the average trip rates stated in Table 4-13 because, while the number of gaming positions and gaming area at Sugarhouse Casino are significantly smaller than others surveyed, the numbers of trips that casino generates is higher per gaming position; these unusual results seem to indicate that there are other unknown factors influencing the trip making characteristics at that location. The other sites surveyed were also more similar in the numbers of gaming positions and amenities offered to those proposed for the Project. The average vehicle trip rates from the Casino de Montreal and Aqueduct were adopted for the Project Site and converted into associated

person trip rates by using mode share observations at Casino de Montreal[1].

The gaming trips have been disaggregated into patrons and employees by data observations at Mohegan Sun in Uncasville, CT. Only the proportion of patron trips to employee trips was adopted, not the trip rates. Based on this data, about 8% of daily Project gaming trips will be made by employees. During the Friday and Saturday peak hours, employee trips will represent about 4% and 7% of all gaming trips, respectively.

Weekday Patron and Employee Distribution Chart

Hour starting at	Patron		Employee	
	Enter	Exit	Enter	Exit
12:00 a.m.	2.9%	6.3%	3.0%	4.0%
1:00 a.m.	2.1%	5.1%	1.4%	4.3%
2:00 a.m.	1.4%	4.7%	0.7%	4.0%
3:00 a.m.	1.2%	3.9%	0.3%	1.6%
4:00 a.m.	1.1%	2.5%	0.1%	0.8%
5:00 a.m.	1.7%	2.1%	0.1%	0.6%
6:00 a.m.	1.5%	2.2%	1.4%	0.6%
7:00 a.m.	1.4%	1.2%	2.0%	1.1%
8:00 a.m.	1.5%	0.8%	3.4%	1.5%
9:00 a.m.	3.2%	1.4%	7.5%	3.8%
10:00 a.m.	4.1%	1.7%	7.7%	4.8%

[1]After incorporating the specific trip generation characteristics and travel mode shares for the Project Site as presented in later sections of this chapter, the resulting revised vehicle trip rates for the Projectare generally unchanged from those shown in Table 4-13, with 0.29 vehicle trips/position during the Friday peak hour and 0.32 vehicle trips/position during the Saturday peak hour. The slight difference for the Saturday peak is due to the specific travel mode share assumptions for the Everett site.

Hour starting at	Patron		Employee	
11:00 a.m.	4.4%	2.4%	7.0%	5.1%
12:00 p.m.	4.6%	2.8%	8.0%	5.6%
1:00 p.m.	5.6%	3.5%	7.2%	5.9%
2:00 p.m.	6.1%	4.0%	6.9%	6.1%
3:00 p.m.	5.3%	5.5%	6.7%	5.9%
4:00 p.m.	4.1%	5.0%	6.7%	5.9%
5:00 p.m.	5.2%	4.9%	4.9%	4.4%
6:00 p.m.	6.5%	4.8%	5.7%	3.9%
7:00 p.m.	7.7%	5.4%	4.4%	6.1%
8:00 p.m.	7.7%	5.4%	3.4%	5.6%
9:00 p.m.	7.5%	7.1%	3.7%	6.8%
10:00 p.m.	7.5%	8.2%	4.0%	6.1%
11:00 p.m.	5.7%	9.1%	3.8%	5.5%
Total	100%	100%	100%	100%

The distributions of patron and employee trips over the course of the day were developed from data at Casino de Montreal (patrons) and two Wynn gaming facilities in Las Vegas (employees). The Weekday Patron and Employee Distribution Chart above shows the hourly distribution of entering and exiting trips on a typical weekday.

By disaggregating trips into patron and employee components, the appropriate mode share adjustments can be made to each group.

Similar to the non-gaming land uses, the number of unadjusted vehicle trips for gaming trips was converted to person trips based on average vehicle occupancy (AVO) rates. Based on the most recent survey of

national vehicle occupancy rates, an AVO of 2.0[2] persons/auto was adopted for gaming patrons and an AVO of 1.13 persons/auto was adopted for gaming employees.

4.4.2.2 INTERNAL CAPTURE RATES

The standard trip generation procedure includes estimation of trips for each individual land use. When large projects have a mix of uses at one site, however, the interaction between land uses is estimated by "internal trips". An example of an internal trip is a hotel guest who also visits the on-site gaming, retail shops, restaurants, or nightclubs.

For this Project, the highest internal trip activity will occur between the hotel and the gaming components. The hotel is an integral element of the Project, and it will generally not compete with the numerous other hotels located in and near downtown Boston, which serve other business and tourist markets. It is anticipated that many hotel guests at the Project will stay on-site once they arrive, but some are expected to travel to other Boston-area destinations. This aspect of trip making activity is incorporated into the trip generation process by adopting a 75% internal trip capture rate for hotel guests.

For the retail, restaurant, and nightclub components, a 20% internal trip capture rate was adopted for patrons, reflecting the fact that these uses will attract many customers who will not visit the gaming component.

An internal capture rate was not applied to 1) gaming component trips, because casino patrons are the primary trip generator of the Project or 2) any Project employee trips, because workers travel to only one job and not multiple on-site destinations.

4.4.2.3 PASS-BY RATES

Pass-by trips have been accounted for in the trip generation process. A pass-by factor accounts for people that are already travelling on Broadway (Route 99) who will stop at the Project and then continue onto another destination. For this Project, only a portion of patron trips generated by the retail and restaurant components are designated as pass-by trips.

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[2] *SEQRA Environmental Assessment Form, Development and Operation of a Video Lottery Facility at Aqueduct Racetrack, Jamaica (Borough of Queens), New York,* prepared for New York State Division of the Lottery, October 2010, prepared by O'Brien & Gere, p 149.

Based on ITE research, about 34% of traffic generated at retail centers with restaurants can be classified as pass-by trips. To ensure a conservative (higher impact) assessment, and given that the Project's commercial establishments will not directly abut Broadway (Route 99), a lower pass-by trip rate of 10% was adopted for the retail, restaurant, and nightclub components.

Pass-by rates were not applied to the gaming component patron trips or any Project employee trips.

For this study, trip generation data has been summarized for daily conditions on a typical Friday and Saturday and for one peak hour on Friday afternoon between 4:00 – 6:00 p.m. and on Saturday afternoon between 3:00 – 4:00 p.m.

4.4.2.4 TRAVEL MODE SHARES

Autos and Taxis

Patrons and employees not assigned to one of the travel modes discussed below will drive. Patrons will park on-site and most employees will drive to off-site parking facilities and travel via employee shuttle bus to the Project. Limited employee parking will be provided on-site.

A portion of patrons will arrive via taxi. Based on vehicle type observations at the Aqueduct casino in July 2013, taxis comprise 14% of the auto/taxi volume totals. For this study, it has been assumed that 10% of auto/taxi group is taxis and 90% is autos.

After accounting for other travel modes, it has been assumed that 69% of patrons will drive and 8% will arrive via taxi. A lower proportion of employees, 44%, will drive and park at the off-site parking facilities.

Public Transportation

Buses and Subway

The Project Site offers opportunities to take advantage of nearby MBTA public transportation services, including bus routes along Broadway (Route 99) and the Orange Line at Wellington, Sullivan Square, and Malden Center stations. Convenient connections to the Orange Line from all other MBTA subway lines can be made at various downtown stations, including Downtown Crossing (Red Line and Silver Line), Haymarket (Green Line), North Station (Green Line), and State (Blue Line).

Patrons – While a small number of local patrons may travel via existing MBTA bus routes to the Project Site, for trip generation purposes it has been assumed that 0% of patrons will use buses. Some patrons from the larger Boston metropolitan area, however, will travel to the Project via the MBTA's extensive subway and commuter rail network. The Proponent will provide shuttle service (for patrons and employees) between the Project Site and nearby Orange Line stations. The final shuttle routes will be determined through on-going discussions with MBTA. Service may be expanded to include Logan International Airport, North Station, South Station, and other major transportation hubs and will be coordinated with the MBTA. Given the Project's proximity to the Orange Line, and the plan for frequent casino shuttle service, it is estimated that 10% of patron trips will use the Orange Line.

Employees – A much higher proportion of employees than patrons will use transit because most employees will be local residents and very limited employee parking will be available on-site. After review of the Central Transportation Planning Staff (CTPS) journey to work data for Everett (the Project's host community with preferential employment), adjacent communities, and the wider Boston region, it is estimated the 30% of employees will use public transportation. This total has been further disaggregated into 20% to the Orange Line and 10% to local MBTA bus routes. Employees will travel between the nearby Orange Line stations and the Project Site via the shuttle described previously, under "Patrons." The Proponent will enhance MBTA bus stops on Broadway (Route 99) near the Project Site entrance, which serve MBTA routes 104, 105, and 109. Employees who live in local neighborhoods can also ride the employee shuttle bus operating between off-site parking facilities and the Project Site. The shuttle system and operating characteristics are still conceptual, but the study team anticipates that 20% of employees will use the shuttle, and 15-minute headways (four buses/hour) would provide an appropriate level of service.

Commuter Rail

The patrons and employees who will make the necessary transfers from existing commuter rail hubs at North Station or South Station to the Orange Line have been included in the estimate of public transportation trips. Patrons and employees riding the Haverhill Line commuter rail service will be able to connect to the Project's shuttle service at Malden Center Station as well. While the Proponent will assist Everett in facilitating the location of a potential future flag-stop for a new commuter rail station on the Newburyport/Rockport line, which runs along the

western edge of the Project Site, for trip generation purposes no trips have been assigned to this potential future service.

Water Transportation

The Proponent will institute frequent, passenger water transport service between the Project Site and key Boston Harbor landing sites. The initial plan is to provide service with stops in Downtown and South Boston, with expansion as demand increases. While a feasibility study of water transportation has been conducted for this Project, including proposed boat capacities and service frequency, a full market study of ridership is not yet complete. It has been assumed that boats will operate with an average of 20% occupancy and that 3% of patrons and employees will use water transportation to the Project Site. See Section 4.4.1.5 for a more detailed discussion of proposed water transportation services.

Tour Bus

From the July 2013 vehicle counts at Casino de Montreal, about 138 tour buses arrived at the casino per day on both Friday and Saturday. Observations at Mohegan Sun in Uncasville, CT, indicate that 80 to 120 tour buses arrive per day, serving about 12% of patrons, a rate also adopted for the Mohegan Sun at Palmer.

After reviewing these observations, it has been assumed that 10% of Project patrons will arrive via tour bus. Assuming 20 passengers per bus (although capacity will be higher), 83 tour buses are estimated to arrive on Friday and 97 on Saturday. No employees will use tour buses.

Private Shuttle Service

Three types of new shuttle service may be established by the Proponent to complement travel demand management strategies and encourage non-automobile travel to the Project Site. The Proponent will provide transit shuttle service (for patrons and employees) between the Project and the MBTA's Orange Line. An employee shuttle service will operate between the off-site lots and the Project Site, with stops in the local neighborhood to serve employees who live relatively close to the Project.

Local employees will rely on MBTA Route 104, Route 105, and Route 107 to commute to the Project Site from nearby neighborhoods. MBTA bus service on Broadway (Route 99) does not operate between 1:00 a.m. and 5:00 a.m. (Route 105 does not operate after 7:30 p.m.). Given the 24/7 nature of the Project, the Proponent intends to provide some type of overnight transit service option when the MBTA is closed. Such a night-

owl route is still conceptual but it may run as a continuous loop as part of the remote employee parking lot shuttle.

Walk/Bicycle

No patrons are assumed to walk/bicycle to the Project. Recent journey to work data for Everett residents indicates that 4.5% currently walk/bicycle to work. While a concentration of employees will be from Everett and able to walk/bicycle to the Project Site, many employees will live further from the Project Site. To reflect these characteristics, a walk/bicycle mode share of 3% was applied to Project employee trips.

Table 4-14, Travel Mode Shares

Travel Mode	Patrons	Employees
Automobiles		
Park on site	69%	0%
Taxi	8%	0%
Park remotely (connect to employee shuttle)	0%	44%[1)]
Total	77%	44%
Public transportation		
Orange line (connect to transit shuttle)	10%	20%
Local bus	0%	10%
Water transportation	3%	3%
Total	13%	33%
Employee Shuttle Bus 1)	0%	20%[1)]
Tour Bus	10%	0%
Walk/Bicycle	0%	3%
Total	100%	100%

1) The employee shuttle bus will operate between off-site employee parking facilities and the Project, with local neighborhood stops along the route. In total, 44% of employees are forecasted to park remotely and ride the shuttle and 20% of employees are expected to board/alight at neighborhood stops.

Using the person trip estimates for each time period and the travel mode shares from Table 4-14, an estimate of trips per mode are summarized in Table 4-15 and Table 4-17 for daily and peak hour conditions, respectively. Table 4-16 and Table 4-18 show daily and peak hour trips, respectively, that will be made by patrons and employees to the Project Site and to off-site employee parking locations.

Table 4-15, Patrons and Employee Daily Trips by Travel Mode

Trip Type/ Direction	Autos/ Taxis	Transit Shuttles	Tour Buses	Employee Shuttles	Transit	Walk/ Bicycle
	Vehicle trips	Vehicle trips	Vehicle trips	Vehicle trips	Person trips	Person trips
Friday						
Patrons						
In	8,756	Both patrons and employee will use transit shuttles. ↓	83	-	3,017	-
Out	8,756		83	-	3,017	-
Total	17,512		166	-	6,033	-
Employees						
In	1,361		-	288	1,153	105
Out	1,361		-	288	1,153	105
Total	2,722		-	576	2,306	210
Total						
In	10,117	288	83	288	4,169	105
Out	10,117	288	83	288	4,169	105
Total	20,234	576	166	576	8,338	210
Saturday						
Patrons						
In	10,415	Both patrons and employee will use transit shuttles. ↓	97	-	3,594	-
Out	10,415		97	-	3,594	-
Total	20,830		194	-	7,188	-
Employees						
In	1,640		-	288	1,387	126
Out	1,640		-	288	1,387	126
Total	3,280		-	576	2,778	252
Total						
In	12,055	288	97	288	4,982	126
Out	12,055	288	97	288	4,982	126
Total	24,110	576	194	576	9,964	252

Table 4-16, Daily Vehicle Trips at Project Site

Location/Direction	Autos/ Taxis	Transit Shuttles	Tour Buses	Employee Shuttles	Total Vehicles
	Vehicle trips	Vehicle trips	Vehicle trips	Vehicle trips	Vehicle trips
Friday					
Project Site					
In	8,756	288	83	288	9,415
Out	8,756	288	83	288	9,415
Total	17,512	576	166	576	18,830
Off-Site Employee Parking Locations					
In	1,361	-	-	288	1,649
Out	1,361	-	-	288	1,649
Total	2,722	-	-	576	3,298
Saturday					
Project Site					
In	10,415	288	97	288	11,088
Out	10,415	288	97	288	11,088
Total	20,830	576	194	576	22,176
Off-Site Employee Parking Locations					
In	1,640	-	-	288	1,928
Out	1,640	-	-	288	1,928
Total	3,280	-	-	576	3,856

Table 4-17, Patrons and Employee Peak Hour Trips by Travel Mode

Trip Type/ Direction	Autos/ Taxis	Transit Shuttles	Tour Buses	Employee Shuttles	Transit	Walk/ Bicycle
	Vehicle trips	Vehicle trips	Vehicle trips	Vehicle trips	Person trips	Person trips
Friday						
Patrons						
In	732	Both patrons and employee will use transit shuttles. ↓	7	-	252	-
Out	690		7	-	237	-
Total	1,422		14	-	489	-
Employees						
In	108		-	12	90	8
Out	151		-	12	126	11
Total	259		-	24	216	19
Total						
In	840	12	7	12	342	8
Out	841	12	7	12	363	11
Total	1,681	24	14	24	705	19
Saturday						
Patrons						
In	866	Both patrons and employee will use transit shuttles. ↓	8	-	299	-
Out	822		8	-	283	-
Total	1,688		16	-	632	-
Employees						
In	130		-	12	109	10
Out	159		-	12	133	12
Total	289		-	24	242	22
Total						
In	966	12	8	12	408	10
Out	981	12	8	12	416	12
Total	1,977	24	16	24	824	22

Table 4-18, Peak Hour Vehicle Trips at Project Site

Location/Direction	Autos/ Taxis	Transit Shuttles	Tour Buses	Employee Shuttles	Total Vehicles
	Vehicle trips	Vehicle trips	Vehicle trips	Vehicle trips	Vehicle trips
Friday					
Project Site					
In	732	12	7	12	763
Out	690	12	7	12	721
Total	1,422	24	14	24	1,484
Off-Site Employee Parking Locations					
In	108	-	-	12	120
Out	151	-	-	12	163
Total	259	-	-	24	224
Saturday					
Project Site					
In	866	12	7	12	897
Out	822	12	7	12	853
Total	1,688	24	14	24	1,750
Off-Site Employee Parking Locations					
In	130	-	-	12	142
Out	159	-	-	12	171
Total	289	-	-	24	313

Table 4-19 shows the peak hour breakout of the transit person trips to the various modes of transit that will be available at the Project Site.

Table 4-19, Peak Hour Transit Trips

Location/Direction	MBTA Orange Line	MBTA Local Bus	Water Shuttle	Tour Bus	Total Transit Trips
	Person Trips	Person Trips	Person Trips	Person Trips	Person Trips
Friday					
Patrons					
In	194	0	58	132	384
Out	182	0	55	130	367
Total	376	0	113	262	751
Employees					
In	55	27	8	0	90
Out	76	38	11	0	125
Total	131	65	19	0	215
Total					
In	249	27	66	132	474
Out	258	38	66	130	492
Total	507	65	132	262	966
Saturday					
Patrons					
In	230	0	69	150	449
Out	218	0	65	149	432
Total	448	0	134	299	881
Employees					
In	66	33	10	0	109
Out	81	40	12	0	133
Total	147	73	22	0	242
Total					
In	296	33	79	150	558
Out	299	40	77	149	565
Total	595	73	156	299	1,303

4.4.3 TRIP DISTRIBUTION

Based on a market study (conducted by TMG Consulting) for patrons covering all six New England states, New York, New Jersey, and Pennsylvania. A proprietary process established a propensity factor for each of the 3,878 cities and towns in the market area. Table 4-20 shows the resulting distribution of patron travel time. Most patrons, 62%, are expected to travel 30 minutes or less to the Project Site and only about 5% are expected to travel more than two hours.

Table 4-20, Patron Market by Travel Time

Market Area Travel Time	Percent
Within 30 minutes (includes visitors arriving via Logan Airport)	62%
30 minutes – 1 hour	17%
1 – 1.5 hours	13%
1.5 – 2 hours	3%
2 – 3 hours	3%
3 - 4 hours	1%
>200 miles	1%
Total	100%

Using the patron market information and knowledge of 1) the regional and local roadway system serving the Project Site, 2) existing traffic patterns; and 3) the most direct travel routes to the Project from major transportation terminals (i.e., Logan Airport, North Station, South Station), a distribution percent was calculated for the major travel corridors serving the Project.

A separate trip distribution pattern was developed for employees because 1) most employees will live closer to the Project than patrons, 2) the Host Community Agreement will result in a high proportion of employees from Everett, and 3) employees will park remotely in off-site parking facilities.

Year 2010 American Community Survey data, as summarized by the Central Transportation Planning Staff (CTPS), indicate that 90% of workers in the Boston metropolitan region have a commute (all travel modes) of one hour or less. Therefore, cities and towns within one hour of the Project Site were included in the catchment area for Project employees. Outside of Everett, the distribution of employees' place of residence was based on Year 2010 population of communities within one hour of the Project Site.

These corridors and the associated distribution percent for patrons and employees are listed in Table 4-21. Also shown is a composite trip distribution, weighted by the proportion of patrons trips and employee trips. Figure 4-48 shows the patron distribution of vehicle trips throughout the study area. Figure 4-49 shows the employee distribution of vehicle trips in the study area. A composite trip distribution for both patrons and employees is shown in Figure 4-50.

Table 4-21, Vehicle Trip Distribution by Travel Corridor

Travel Corridor	Patron Percent	Employee Percent	Composite Percent
I-93 North	15%	12%	15%
Route 16 West	5%	3%	5%
Route 38 West	1%	1%	1%
Broadway West	1%	1%	1%
Washington Street West	4%	3%	4%
I-93 South	38%	29%	37%
Rutherford Avenue	15%	9%	14%
Beacham Street East	2%	4%	2%
Route 16 East	3%	6%	3%
Route 1 North	9%	7%	9%
Route 99 North	2%	5%	2%
Main St (Everett Malden)	2%	3%	2%
Route 28 North	1%	1%	1%
Other Local	2%	16%	4%
Total	100%	100%	100%

The patron and employee trip distribution patterns were used to assign new Project vehicle trips to the area roadway network.Figure 4-51A and Figure 4-51B depict the Friday p.m. peak hour Project trip assignments at intersections 1-26, located in Everett. Figure 4-52 shows Friday p.m. peak hour Project trip assignments at intersections 27-32, located in Chelsea and Revere. Figure 4-53 shows the Friday p.m. peak hour Project trip assignments at intersections 33-44, located in Medford. Figure 4-54 shows the Friday p.m. peak hour Project trip assignmentsat intersections 45-57, located in Somerville, Boston, and Cambridge. Figure 4-55A and Figure 4-55B depict the Saturday afternoon peak hour Project trip assignments at intersections 1-26, located in Everett. Figure 4-56 shows the Saturday afternoonpeak hour Project trip assignments at intersections 27-32, located in Chelsea and Revere. Figure 4-57 shows the Saturday afternoon peak hour Project trip assignmentsat intersections 33-44, located in Medford. Figure 4-58 shows the Saturday afternoonpeak hour Project trip assignmentsat intersections 45-57, located in Somerville, Boston, and Cambridge.

Figure 4-59A and Figure 4-59B depict the Build (2023) Friday p.m. peak hour traffic volumes at intersections 1-26, located in Everett. Figure 4-60 shows Build (2023) Friday p.m. peak hour traffic volumes at intersections 27-32, located in Chelsea and Revere. Figure 4-61 shows the Build (2023) Friday p.m. peak hour traffic volumes at intersections 33-44, located in Medford. Figure 4-62 shows the Build (2023) Friday p.m. peak hour traffic volumes at intersections 45-57, located in Somerville, Boston, and Cambridge. Figure 4-63A and Figure 4-63B depict the Build (2023) Saturday afternoon peak hour traffic volumes at intersections 1-26, located in Everett. Figure 4-64 shows the Build (2023) Saturday afternoonpeak hour traffic volumes at intersections 27-32, located in Chelsea and Revere. Figure 4-65 shows the Build (2023) Saturday afternoonpeak hour traffic volumes at intersections 33-44, located in Medford. Figure 4-66 shows the Build (2023) Saturday afternoonpeak hour traffic volume sat intersections 45-57, located in Somerville, Boston, and Cambridge.

4.4.4 BUILD TRAFFIC OPERATIONS

Anticipated Project-generated traffic volumes are superimposed upon the 2023 No-Build traffic volumes to reflect the 2023 Build conditions with the Project. The sections that follow describe the capacity analysis of the roadways under the Build (2023) conditions. Table 4-22 shows the roadway segment capacity analysis results for the Build conditions. Table 4-23 shows the intersection capacity analysis results for the Build conditions.

Table 4-22, Build (2023) Conditions Roadway Segment Capacity Analysis Summary

Roadway Segments	Weekday						Saturday					
	Volume (vph)	Density (pcphpl)	LOS	Volume (vph)	Density (pcphpl)	LOS	Volume (vph)	Density (pcphpl)	LOS	Volume (vph)	Density (pcphpl)	LOS
	Northbound			Southbound			Northbound			Southbound		
Broadway (Route 99), Everett north of Bowdoin Street	1547	19.6	C	1559	19.7	C	1376	17.4	B	1529	19.3	C
Broadway (Route 99), Everett south of Project Site	2043	25.8	C	1781	22.5	C	1734	21.9	C	1893	23.9	C
	Eastbound			Westbound			Eastbound			Westbound		
Route 16, Medford west of Santilli Circle	3366	28.4	D	3120	26.3	D	2538	21.4	C	2647	22.3	C
Route 16, Everett east of Sweetser Circle	2888	24.4	C	3519	29.7	D	2197	18.5	C	3102	26.2	D
Route 16, Everett west of Locust Street	2417	30.6	D	1659	14.0	B	1987	25.1	C	1621	13.7	B

Table 4-23, Build (2023) Conditions Intersection Capacity Analysis Summary

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
	LOS	Delay (sec/veh)	50% Queue Length	95% Queue Length	LOS	Delay (sec/veh)	50% Queue Length	95% Queue Length
1. (S) Horizon Way/ Broadway (Route 99)	**A**	**2.0**			**A**	**2.3**		
Horizon EB left |right	D	54.3	2	29	D	53.0	5	43
Broadway (Route 99) NB left	F	88.5	2	m2	F	96.0	1	m3
Broadway NB (Route 99) thru | thru| thru	A	0.2	2	3	A	0.9	1	1
Broadway SB (Route 99) SB thru | thru/right	A	3.2	75	m93	A	2.2	0	m31
2. (S) Site Driveway/Mystic Street/Broadway (Route 99)	**C**	**31.3**			**D**	**37.8**		
Site Driveway EB left	D	53.4	48	#113	D	51.7	53	#174
Site Driveway EB left/thru	D	53.9	49	#115	D	51.7	53	#174
Site Driveway EB right	C	20.1	82	#271	B	18.7	143	#321
Broadway (Route 99) NB left	D	53.3	164	#385	D	49.4	161	#434
Broadway (Route 99) NB thru | thru/right	A	6.0	10	#842	A	9.0	78	518
Broadway (Route 99) SB left	E	66.0	3	15	E	68.4	4	18
Broadway (Route 99) SB thru	D	53.3	575	#746	E	65.2	~608	#747
3. (U) Lynde Street/Broadway (Route 99)	-	-			-	-		
Broadway (Route 99) NB thru | thru/right	A	0.0	-	0	A	0.0	-	0
Broadway (Route 99) SB left/thru | thru	A	0.5	-	2	A	0.5	-	2
4. (U) Lynde Street/Bow Street	-	-			-	-		
Lynde EB left/thru	A	9.9	-	1	A	9.4	-	1
Bow NB thru/right	A	0.0	-	0	A	0.0	-	0
5. (U) Thorndike Street/Broadway (Route 99)	-	-			-	-		
Broadway (Route 99)NB thru | thru/right	A	0.0	-	0	A	0.0	-	0
Broadway (Route 99) SB left/thru | thru	A	1.0	-	4	A	0.5	-	2
6. (U) Thorndike Street/Bow Street	-	-			-	-		
Thorndike EB left/thru	A	10.0	-	4	A	9.5	-	2

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Bow NB thru/right	A	0.0	-	0	A	0	-	0
7. (S) Beacham Street/Broadway (Route 99)	**F**	**263.4**			**F**	**140.7**		
McDonalds EB left/thru	C	33.0	21	50	C	25.1	19	64
McDonalds EB right	C	32.2	0	0	C	24.1	0	0
Beacham WB left/thru/right	F	204.6	~282	#459	E	56.2	128	#382
Broadway (Route 99) NB left/thru | thru/right	F	514.7	~842	#983	F	172.5	~433	#831
Broadway (Route 99) SB left/thru | thru/right	D	44.3	300	#934	F	136.6	~367	#907
8. (S) Bowdoin Street/Broadway (Route 99)	**C**	**22.7**			**B**	**11.9**		
Bowdoin EB left/right	D	47.6	28	78	D	37.2	31	#120
Broadway (Route 99) NB left/thru | thru	D	36.9	361	m85	B	14.0	164	#688
Broadway (Route 99) SB thru | thru/right	A	7.0	143	550	A	8.1	136	524
9. (U) Beacham Street/Robin Street	**-**	**-**			**-**	**-**		
Beacham EB left/thru/right	A	0.0	-	0	A	0.0	-	0
Beacham WB left/thru/right	A	4.7	-	19	A	3.9	-	12
Robin NB left/thru/right	C	16.1	-	39	B	12.8	-	10
Driveway SB left/thru	E	47.7	-	2	D	29.9	-	1
Driveway SB right	B	12.4	-	0	B	11.7	-	1
10a. (S) Revere Beach Parkway (Route 16)/Santilli Highway/Mystic View Road/Route 99 Connector (aka Santilli Circle)– West Intersection	**C**	**23.8**			**E**	**68.6**		
Revere Beach Parkway (Route 16) EB thru | thru | thru	B	10.5	220	267	A	8.5	113	142
Revere Beach Parkway (Route 16) EB bear right (to Circle)	E	67.0	~591	#825	B	15.1	202	339
Revere Beach Parkway (Route 16) Route 16 WB thru | thru | thru	A	3.9	54	61	A	4.0	47	54
Rotary SB thru | thru/right	C	34.8	157	216	F	291.3	~462	#595
Rotary SB bear right	C	31.1	~15	#265	A	1.7	0	0
10b. (S) Revere Beach Parkway (Route 16)/Santilli Highway/Mystic View Road/Route 99 Connector	**F**	**80.8**			**E**	**74.0**		

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
(aka Santilli Circle) – East Intersection								
Revere Beach Parkway (Route 16) EB thru | thru | thru	A	4.8	61	68	A	4.3	39	46
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	B	11.0	230	280	B	10.1	195	239
Rotary NB thru | thru | thru	F	252.8	~450	#543	F	202.3	~410	#502
11. (U) Revere Beach Parkway (Route 16)/Broadway (Route 99)/Main Street (aka Sweetser Circle)	-	-			-	-		
Revere Beach Parkway (Route 16) Ramp EB	F	153.8	-	1961	F	131.3	-	1973
Broadway (Route 99) WB	F	116.2	-	904	F	105.6	-	877
Broadway (Route 99) NB	F	153.8	-	2733	F	59.2	-	419
Main SB	C	16.6	-	94	C	19.7	-	111
12. (S) 2nd Street/Corey Street/Broadway (Route 99)	**D**	**52.2**			**C**	**31.5**		
Corey EB left/thru/right	D	45.9	68	123	D	39.3	23	70
2nd WB left/thru/right	E	60.5	188	#335	D	36.6	112	#258
Broadway (Route 99) NB left/thru/right	E	64.8	383	#805	C	27.1	198	#537
Broadway (Route 99) SB left/thru/right	C	33.8	289	m#437	C	32.3	245	#647
13. (S) Norwood Street/Chelsea Street/Broadway (Route 99)	**F**	**80.0**			**D**	**51.4**		
Norwood EB left	D	38.7	56	109	C	30.0	28	85
Norwood EB thru	D	49.2	122	#234	C	33.4	57	149
Norwood EB right	D	38.6	49	98	C	30.9	33	99
Chelsea WB left	D	48.3	126	197	C	34.5	79	191
Chelsea WB right	D	41.2	79	136	C	29.1	39	108
Broadway (Route 99) NB thru/right	B	16.8	103	m#624	C	30.7	190	#605
Broadway (Route 99) SB left/thru	F	197.5	~469	#804	F	91.8	~244	#711
14. (U) Mansfield Street/Church Street/Broadway (Route 99)	-	-			-	-		
Mansfield WB left/thru/right	C	18.1	-	26	B	14.4	-	14
Broadway (Route 99) NB left/thru	A	1.4	-	4	A	1.4	-	4

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Broadway (Route 99) SB thru/right	A	0.0	-	0	A	0.0	-	0
15. (S) High Street/Hancock Street/Broadway (Route 99)	**D**	**44.4**			**B**	**18.9**		
Hancock EB left/thru/right	D	39.2	159	#434	C	32.2	58	#275
Broadway (Route 99) NB left/thru/right	E	67.9	~502	#799	C	20.9	135	492
Broadway (Route 99) SB left/thru/right	B	17.0	263	m97	B	13.5	129	433
16. (S) Ferry Street/Broadway (Route 99)	**F**	**642.6**			**E**	**63.6**		
Ferry EB left/thru | thru/right	C	32.1	153	#350	E	63.3	105	#290
Ferry WB left	B	19.6	35	89	C	22.3	50	#145
Ferry WB thru	C	21.1	143	288	C	23.6	124	312
Ferry WB right	B	17.4	0	26	B	18.8	0	49
Broadway (Route 99) NB left/thru	F	888.1	~772	m#915	F	101.6	~221	#614
Broadway (Route 99) NB right	C	28.1	136	m193	B	14.9	31	103
Broadway (Route 99) SB left/thru	F	1926.3	~565	#809	F	100.4	~244	#664
Broadway (Route 99) SB right	C	20.0	26	63	B	13.7	15	57
17. (S) McKinley Street/Cameron Street/Broadway (Route 99)/Lynn Street	**E**	**70.0**			**C**	**24.7**		
Cameron EB left/bear left/thru	D	41.3	25	58	C	29.2	1	8
Cameron EB right	D	38.4	2	12	C	29.2	1	8
McKinley WB left/right/hard right	D	38.4	0	0	C	29.4	0	2
Broadway (Route 99) NB thru	C	23.1	184	#552	C	24.8	117	#338
Broadway (Route 99) NB bear right/right	C	20.4	113	#361	C	22.4	82	#243
Broadway (Route 99) SB hard left/left/thru	F	184.2	~375	#568	C	28.7	167	#491
Lynn SWB left/bear left/hard right	B	16.1	39	140	B	19.3	48	160
18. (S) Tileston Street/Oakes Street/Main Street	**D**	**41.1**			**B**	**13.4**		
Tileston EB left/thru/right	F	135.6	~140	#401	C	22.7	48	#163
Oakes WB left/thru/right	B	17.3	33	105	B	17.9	27	87
Main NB left	A	7.9	3	22	A	6.9	3	25

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Main NB thru	B	15.6	118	#463	B	11.0	84	#366
Main SB thru/right	B	15.0	110	#432	B	12.3	97	#427
19. (U) Waters Avenue /Linden Street/Main Street	-	-			-	-		
Waters EB left	F	166.7	-	32	F	52.3	-	11
Waters EB right	B	12.5	-	7	B	12.7	-	7
Linden WB left/thru/right	F	733.8	-	433	F	314.0	-	285
Main NB left/thru	A	2.1	-	7	A	1.7	-	5
Main SB thru/right	A	0.0	-	0	A	0.0	-	0
20. (S) Peirce Avenue/Bellingham Avenue/Main Street	**C**	**20.9**			**B**	**16.0**		
Peirce EB left/thru/right	C	27.5	8	46	C	27.2	6	43
Bellingham WB left/thru/right	C	25.9	0	10	C	26.1	0	21
Main NB thru	C	24.7	243	#459	B	15.5	148	245
Main SB thru	B	14.7	155	248	B	13.7	138	220
21. (S) Revere Beach Parkway (Route 16)/Garvey Street/2nd Street	**E**	**76.9**			**C**	**29.2**		
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	F	123.5	~1354	#1423	D	39.6	~803	#894
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	B	11.3	62	293	B	14.3	126	#348
2nd NB left/thru/right	F	100.7	~474	#695	D	51.7	305	#478
2nd SB left/thru/right	C	33.5	110	172	C	27.6	71	120
22. (S) Revere Beach Parkway (Route 16)/Spring Street	**D**	**35.1**			**C**	**24.3**		
Revere Beach Parkway (Route 16) EB left	E	71.0	196	m167	E	68.0	157	m161
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	B	18.3	181	m#873	B	13.3	79	m#773
Revere Beach Parkway (Route 16) WB left	E	60.6	102	m121	E	70.1	94	m125
Revere Beach Parkway (Route 16) thru | thru | thru/right	D	42.5	792	#1119	C	20.6	506	#1050
Spring NB left/thru/right	F	92.9	196	#355	E	76.4	126	#252
Spring SB left/thru/right	E	55.9	97	177	E	64.0	122	#237
23. (S) Revere Beach Parkway (Route 16)/South Ferry Street	**B**	**12.5**			**A**	**7.6**		
Revere Beach Parkway (Route	D	44.7	0	m441	E	57.8	270	m365

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
16) EB left								
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	A	0.1	0	146	A	0.1	0	68
Revere Beach Parkway (Route 16) WB thru | thru| thru/right	B	19.2	393	m797	A	6.4	74	804
24. (S) Revere Beach Parkway (Route 16)/Vine Street	**D**	**43.4**			**C**	**25.2**		
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	D	38.5	465	#1103	C	25.2	275	#716
Revere Beach Parkway (Route 16) WB left	E	72.7	27	m56	E	59.8	25	m47
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	C	21.3	95	615	B	16.8	344	626
Vine NB left/thru/right	F	181.6	~451	#662	E	69.0	163	#291
Vine SB left/thru/right	D	55.0	265	386	D	52.0	170	267
25. (S) Revere Beach Parkway (Route 16)/Vale Street	**B**	**19.9**			**B**	**12.4**		
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	B	16.4	263	m#960	B	11.6	230	164
Revere Beach Parkway (Route 16) WB left	E	68.4	14	m15	D	51.5	22	m30
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	B	16.1	344	m220	A	7.9	202	m286
Vale NB left/thru/right	E	72.1	258	347	E	57.2	75	150
26. (S) Revere Beach Parkway (Route 16)/Everett Avenue	**E**	**75.7**			**D**	**50.0**		
Revere Beach Parkway (Route 16) EB left	F	152.7	~295	#483	E	77.8	171	#326
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	D	52.1	386	#1126	C	25.4	270	#790
Revere Beach Parkway (Route 16) WB left	D	54.7	80	128	D	40.8	74	129
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	D	52.2	345	#845	D	43.0	317	#751
Everett NB left	F	240.2	~452	#656	F	246.0	~291	#459
Everett NB thru/right	D	54.8	416	#573	D	48.9	228	331
Everett SB left	F	402.0	~136	#261	E	76.9	64	#156
Everett SB thru/right	D	40.5	196	283	D	42.0	151	231
27. (S) William Street/Chestnut Street	**C**	**27.3**			**B**	**14.7**		
Chestnut EB left/thru/right	C	21.5	102	174	C	20.4	87	152

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Williams NB thru/right	C	20.4	273	#514	B	14.8	210	332
Williams SB left/thru	D	40.4	216	#436	B	10.6	100	164
28. (S) Revere Beach Parkway (Route 16)/Union Street	**B**	**10.6**			**A**	**8.9**		
Revere Beach Parkway (Route 16) EB thru | thru | thru	B	10.0	544	m587	A	8.9	66	479
Revere Beach Parkway (Route 16) WB thru | thru | thru	A	6.8	258	m195	A	7.0	212	m139
Revere Beach Parkway (Route 16) WB bear right	B	15.9	32	m33	B	13.1	19	m17
Union SEB left | left	C	30.2	30	54	C	25.1	25	47
Union SEB hard right	C	28.6	0	11	C	23.8	0	10
29. (S) Revere Beach Parkway (Route 16)/Washington Street	**F**	**107.7**			**F**	**123.3**		
Revere Beach Parkway (Route 16) EB left	F	106.8	~286	#487	F	148.7	~215	#378
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	F	142.4	~721	#896	F	142.7	~598	#793
Revere Beach Parkway (Route 16) WB left	F	86.2	127	m173	E	65.5	70	m82
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	F	99.9	~614	m#676	F	138.3	~595	m#641
Washington NB left/thru/right	D	44.4	245	#619	C	32.4	178	#510
Washington SB left/thru	D	36.5	181	#456	C	27.8	118	#320
Washington SB right	C	33.0	122	259	C	26.0	73	181
30. (S) Revere Beach Parkway (Route 16)/Webster Avenue	**F**	**118.4**			**F**	**80.0**		
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	F	161.3	~694	m#958	D	42.7	276	m#669
Revere Beach Parkway (Route 16) WB left	F	177.6	~400	#602	F	370.5	~393	#580
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	C	26.7	429	#824	C	25.8	425	#902
Webster NB left**	F	144.2	~181	#356	F	203.2	~249	#435
Webster NB thru/right	D	53.9	423	571	D	45.4	274	391
Webster SB left**	F	780.8	~283	#441	F	359.1	~225	#378
Webster SB thru/right	E	68.0	301	#454	F	98.9	250	#446
31. (U) Revere Beach Parkway (Route 16)/U.S. Route 1 Interchange* **	-	-			-	-		

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
32a. (S) Beach Street/Everett Street/Route 1A/Route 16/Route 60 (aka Bell Circle) – East Intersection	**E**	**64.7**			**E**	**64.3**		
Beach WB right | right	D	42.0	111	#282	E	57.2	172	#360
NB Rotary thru | thru (continue in rotary)	B	14.4	0	m0	B	14.5	0	m0
NB Rotary right | right (onto Beach EB)	F	90.2	120	m43	F	84.2	63	m36
32b. (S) Beach Street/Everett Street/Route 1A/Route 16/Route 60 (aka Bell Circle) – West Intersection	**A**	**0.4**			**A**	**0.3**		
Beach EB right	A	0.5	0	0	A	0.3	0	0
Rotary SB thru | thru (cont in rotary)	A	0.4	5	m6	A	0.3	4	m4
Rotary SB right (onto Beach WB)	A	0.4	0	m0	A	0.2	0	m0
32c. (S) Beach Street/Everett Street/Route 1A/Route 16/Route 60 (aka Bell Circle) – North Intersection	**C**	**23.0**			**C**	**20.2**		
Rotary WB thru | thru	D	37.0	482	m#633	C	30.5	457	m513
Rotary WB right	B	15.6	89	m112	B	14.7	96	m118
Route 60 NB thru | thru	A	0.1	0	m0	A	0.1	0	m0
Route 60 SB thru | thru	C	27.7	256	328	C	28.4	277	353
Route 60 SB right (onto Rotary)	C	29.1	181	303	C	22.7	74	148
32d. (S) Beach Street/Everett Street/Route 1A/Route 16/Route 60 (aka Bell Circle) – South Intersection	**F**	**111.3**			**F**	**85.8**		
Rotary EB thru | thru	D	37.2	205	#324	C	26.1	130	195
Rotary EB right | right (onto 1A SB)	C	27.2	215	#419	C	42.0	190	#585
Route 1A NB right | right (towards rotary)	B	19.2	179	244	B	18.1	144	202
Route 60 SB thru | thru	A	5.3	67	75	A	6.0	74	81
Route 60 NEB thru | thru/right	F	269.8	~929	#1065	F	205.6	~790	#925
33. (S) Fellsway West (Route 28)/Fulton Street	**D**	**41.4**			**C**	**22.3**		
Fellsway West (Route 28) EB left	D	47.6	67	159	D	40.8	30	96

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Fellsway West (Route 28) EB thru | thru	D	39.8	365	#850	B	16.5	111	320
Fellsway West (Route 28) EB right	B	18.5	0	0	B	12.9	0	0
Fellsway West (Route 28) WB left	D	48.0	69	165	D	42.4	41	119
Fellsway West (Route 28) WB thru | thru/right	D	42.3	370	#867	B	18.4	172	471
Fulton NB left/thru/right	D	37.4	156	#407	C	33.0	56	154
Fulton SB left/thru/right	D	47.7	100	#317	D	42.2	90	232
34. (S) Fellsway West (Route 28)/Salem Street (Route 60)	**E**	**55.7**			**D**	**35.8**		
Fellsway West (Route 28) EB left	E	68.3	169	#468	D	50.3	132	#363
Fellsway West (Route 28) EB thru | thru/right	D	39.0	314	#765	C	25.3	116	267
Fellsway West (Route 28) WB left	D	52.7	106	#261	D	52.6	103	#247
Fellsway West (Route 28) WB thru | thru	D	52.2	331	#743	C	31.1	173	354
Fellsway West (Route 28) WB right	C	24.0	0	20	C	23.6	0	13
Salem (Route 60) NB left/thru | thru/right	F	102.5	~204	#494	D	38.4	140	#331
Salem (Route 60) SB left/thru | thru/right	D	41.8	163	#396	D	38.2	152	#359
35. (S) Central Avenue/Medford Street/ Fellsway (Route 28)	**F**	**164.6**			**D**	**45.0**		
Central EB left/thru/right	E	58.2	240	362	D	49.7	141	242
Medford WB left/thru	E	60.2	218	335	D	51.1	163	271
Medford WB right	D	39.1	0	66	D	36.4	0	54
Fellsway (Route 28) NB left	E	66.8	105	#214	D	53.0	76	155
Fellsway (Route 28) NB thru | thru	F	299.4	~811	#1042	D	49.5	303	#528
Fellsway (Route 28) NB right	C	33.1	0	0	C	28.4	0	0
Fellsway (Route 28) SB left	F	188.7	~341	#578	E	60.5	171	#378
Fellsway (Route 28) SB thru | thru/right	F	89.1	~554	#770	C	28.9	170	284
36. (S) Riverside Avenue/Fellsway (Route 28)	**D**	**41.3**			**C**	**33.5**		
Riverside EB left	F	99.2	168	#543	D	52.8	134	#463
Riverside EB thru*	D	36.0	165	#479	-	-	-	-

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Riverside EB right*	C	28.6	37	143	-	-	-	-
Riverside EB thru/right*	-	-	-	-	D	47.1	184	#603
Riverside WB left	C	29.9	23	88	C	32.4	19	#95
Riverside WB thru/right	C	29.2	82	224	C	28.5	63	190
Fellsway (Route 28) NB left	D	51.4	101	#295	E	55.6	83	#230
Fellsway (Route 28) NB thru | thru | thru/right	C	34.7	237	#653	C	21.3	106	252
Fellsway (Route 28) SB left	D	48.8	70	175	D	48.3	23	79
Fellsway (Route 28) SB thru | thru | thru/right	D	37.8	228	#564	C	27.0	111	265
37. (U) I-93 Southbound Off-ramp/Mystic Valley Parkway (Route 16) Southbound Connector***	-	-			-	-		
38. (S) Harvard Street/Mystic Avenue (Route 38)	**E**	**74.7**			**E**	**57.6**		
Harvard EB left/thru | thru/right	D	44.6	273	344	D	41.2	220	283
Mystic Valley Parkway (Route 16) WB left	D	54.8	345	m#487	D	50.3	337	m#477
Mystic Valley Parkway (Route 16) WB thru	E	65.7	423	m#601	E	70.0	431	m#629
Mystic Valley Parkway (Route 16) WB right	D	43.3	113	m184	D	39.9	96	m166
Mystic (Route 38) NB left	E	70.5	74	#155	E	66.4	50	99
Mystic (Route 38) NB thru | thru/right	F	95.5	~302	#429	D	44.3	90	142
Mystic (Route 38) SB left	F	288.2	~220	#374	F	193.4	~163	#308
Mystic (Route 38) SB thru | thru/right	D	42.8	96	140	D	40.5	86	127
39. (S) Harvard Street/Mystic Valley Parkway (Route 16)/Mystic Valley Parkway (Route 16) Southbound Connector	**E**	**73.7**			**D**	**40.6**		
Mystic Valley Parkway (Route 16) EB thru | thru	B	14.3	224	m222	B	12.4	145	m165
Mystic Valley Parkway (Route 16) WB thru | thru	B	14.6	235	287	B	14.6	234	285
Mystic Valley (Route 16) SB left | left	F	169.2	~701	#837	E	78.0	~476	#624
Mystic Valley (Route 16) SB right	E	59.3	337	#552	D	53.2	318	#522
40. (S) Mystic Valley Parkway (Route 16)/Locust Street	**C**	**23.7**			**F**	**88.9**		

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Mystic Valley Parkway (Route 16) EB left | left	D	47.5	159	218	F	823.3	~221	#328
Mystic Valley Parkway (Route 16) EB thru | thru	B	15.7	517	852	B	12.9	410	570
Mystic Valley Parkway (Route 16) WB thru | thru | thru	C	20.6	264	406	C	29.1	316	397
Locust SB left	D	51.1	157	241	D	54.8	204	302
Locust SB right | right	D	38.4	0	39	D	37.4	0	40
41. (S) Mystic Valley Parkway (Route 16)/Commercial Street	**B**	**12.6**			**A**	**8.5**		
Mystic Valley Parkway (Route 16) EB left	D	43.4	50	97	D	41.4	32	70
Mystic Valley Parkway (Route 16) EB thru | thru	A	9.1	334	552	A	4.9	200	308
Mystic Valley Parkway (Route 16) WB thru | thru	B	13.9	335	530	A	9.3	238	365
Mystic Valley Parkway (Route 16) WB right	A	7.7	36	84	A	5.3	13	37
Commercial SB left	D	39.7	43	87	D	41.0	27	62
Commercial SB right	D	36.4	0	42	D	38.5	0	44
42a. (S) Mystic Valley/Revere Beach Parkway (Route 16)/Fellsway (Route 28)/ Middlesex Avenue (aka Wellington Circle) – West Intersection	**F**	**102.5**			**F**	**85.0**		
Mystic Valley Parkway (Route 16) EB thru | thru | thru | thru | thru/right	F	130.3	~449	#515	D	42.4	264	#306
Mystic Valley Parkway (Route 16) WB left | left | left	F	124.1	~388	m#429	F	194.5	~485	m#582
Mystic Valley Parkway (Route 16) WB thru | thru	C	24.1	306	m346	B	15.3	182	m250
Fellsway (Route 28) SB left | left	F	293.3	~302	#413	F	161.1	~214	#318
Fellsway (Route 28) SB thru | thru | thru/right	E	64.3	136	#208	F	97.7	~175	#257
Middlesex SWB left | left | left/bear right	B	16.1	14	17	B	16.6	15	#24
Middlesex SWB bear right	B	14.5	6	m12	B	17.2	10	m12
42b. (S) Mystic Valley/Revere Beach Parkway (Route 16)/Fellsway (Route 28)/ Middlesex Avenue (aka Wellington Circle) – East Intersection	**F**	**83.1**			**C**	**29.8**		

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Mystic Valley Parkway (Route 16) EB left | left	D	47.4	128	m106	D	47.4	111	m117
Mystic Valley Parkway (Route 16) EB thru | thru | thru | thru	F	131.8	~606	m#172	B	18.7	150	m170
Mystic Valley Parkway (Route 16) WB thru | thru | thru | thru | thru	D	36.6	419	#472	C	32.4	395	440
Mystic Valley Parkway (Route 16) WB right	F	83.2	~485	#712	D	42.4	314	#530
Fellsway (Route 28) NB left	E	61.4	318	#536	C	32.8	157	247
Fellsway (Route 28) NB left/ thru | thru	F	97.9	~468	#606	C	30.4	162	219
Fellsway (Route 28) NB bear right	F	203.0	~558	#775	E	55.4	275	#461
Fellsway (Route 28) NB right | right	C	27.8	409	#572	C	20.7	314	413
42c. (S) Mystic Valley/Revere Beach Parkway (Route 16)/Fellsway (Route 28)/ Middlesex Avenue (aka Wellington Circle) – North Intersection	**B**	**16.8**			**C**	**22.0**		
Fellsway (Route 28) NB thru | thru | thru	A	8.0	231	m187	A	7.4	126	m144
Middlesex SWB thru | thru | thru | thru/right	D	36.9	118	151	D	38.5	140	177
43. (U) Revere Beach Parkway (Route 16) Eastbound/River's Edge Drive Ramps* **	-	-			-	-		
44. (U) Revere Beach Parkway (Route 16) Westbound/River's Edge Drive Ramps* **	-	-			-	-		
45. (S) I-93 Ramps/Mystic Avenue (Route 38)	**F**	**122.7**			**B**	**19.2**		
I-93 SB off-ramp WB left | left	F	153.9	~396	#519	C	33.2	95	139
I-93 SB off-ramp WB right	C	24.9	0	47	C	27.1	0	26
Mystic Ave (Route 38) NB thru | thru/right	F	154.3	~601	#796	B	18.7	113	240
Mystic Ave (Route 38) SB left	C	31.7	85	160	B	18.2	56	144
Mystic Ave (Route 38) SB thru | thru	A	8.5	56	79	A	5.2	30	56
46. (S) I-93 NB Off-ramp/McGrath Highway (Route 28)	**F**	**191.3**			**D**	**53.9**		
I-93 NB off-ramp WB thru | thru | thru	D	40.3	297	350	D	35.1	189	230

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Fellsway (Route 28) SB bear left | bear left	D	46.3	376	460	D	48.1	409	#507
Fellsway (Route 28) SB thru | thru/right	F	352.0	~1229	#1369	E	71.3	~540	#681
47a. (S) Mystic Avenue (Route 38)/McGrath Highway (Route 28)	**E**	**72.0**			**C**	**24.3**		
Mystic (Route 38) EB thru | thru/right	E	66.8	468	#626	D	38.9	257	326
Mystic (Route 38) EB right	D	38.4	54	191	C	32.3	0	73
Mystic (Route 38) WB thru | thru	C	30.1	428	m292	C	22.6	213	269
McGrath (Route 28) SB left	B	14.2	36	m22	B	12.3	23	m23
McGrath (Route 28) SB thru | thru	F	121.8	~752	m71	B	12.0	66	M65
47b. (S) Mystic Avenue (Route 38)/McGrath Highway (Route 28)	**F**	**126.1**			**C**	**31.5**		
Mystic (Route 38) EB thru | thru	A	1.3	17	m18	A	1.2	11	13
McGrath (Route 28) NB left | left	F	287.1	~527	#657	E	60.3	187	246
McGrath (Route 28) NB right | right	D	46.6	20	64	D	46.5	0	47
48. (U) Mystic Avenue (Route 38)/I-93 Southbound On-ramp Diverge* **	-	-			-	-		
49. (S) Broadway/McGrath Highway (Route 28)	**F**	**145.6**			**D**	**45.6**		
Broadway EB left	F	94.7	253	#460	E	58.5	217	#381
Broadway EB left/thru | thru | thru	D	50.9	202	253	D	39.2	133	182
Broadway EB right	C	32.6	38	77	C	26.1	2	28
Broadway WB left	D	54.3	118	196	D	50.5	84	150
Broadway WB left/thru | thru	E	60.0	155	#224	D	48.7	88	132
Broadway WB right	D	39.4	151	233	D	36.6	100	163
McGrath (Route 28) NB left	F	88.2	130	#262	E	69.7	113	#237
McGrath (Route 28) NB thru | thru | thru/right	F	215.7	~842	#938	D	43.2	321	#432
McGrath (Route 28) SB left	E	79.0	118	#233	E	70.6	118	#247
McGrath (Route 28) SB thru | thru | thru/right	F	166.7	~705	#801	D	44.3	328	#445
50. (U) Mystic Avenue (Route 38)/I-93 Northbound On-ramp Diverge* **	-	-			-	-		

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
51. (S) Dexter Street/Alford Street (Route 99)	**C**	**23.2**			**B**	**12.4**		
Driveway EB left/thru/right								
Dexter WB left/thru/right	E	57.5	177	257	E	57.7	147	223
Alford (Route 99) NB left	E	61.5	2	11	E	61.5	2	11
Alford (Route 99) NB thru | thru/right	C	21.0	672	#1118	A	7.0	193	302
Alford (Route 99) SB thru | thru/right	C	20.6	346	#1085	B	11.7	166	#1021
52. (S) Cambridge Street/I-93 Northbound Off-ramp	**C**	**28.6**			**C**	**30.3**		
Cambridge Street EB thru | thru	C	35.0	174	216	C	32.5	168	257
Cambridge Street WB thru | thru	D	35.3	247	293	C	29.4	142	#297
I-93 NB ramp NB left	B	12.1	153	219	B	13.6	167	158
I-93 NB ramp NB right	C	24.6	428	640	D	36.9	575	566
53a. (S) Main Street/Maffa Way/Cambridge Street/Alford Street (aka Sullivan Square)	**D**	**38.0**			**E**	**63.1**		
Maffa EB left/thru | thru/right	D	45.9	268	595	E	76.0	~315	#459
Maffa WB left	C	29.9	123	m131	E	62.2	294	#474
Maffa WB right	C	22.9	181	m194	B	19.3	0	m0
Cambridge NB thru	E	56.8	285	#612	E	73.4	653	#903
Cambridge NB right	C	21.7	179	248	C	28.4	261	395
Alford SB left/thru	B	13.2	48	m86	D	38.5	22	m29
53b. (S) Mishawum Street/Rutherford Avenue (Route 99)	**D**	**44.1**			**D**	**36.8**		
Hood BP North EB thru	D	35.4	88	151	E	60.8	106	174
Hood BP North EB right	D	40.4	62	#203	D	53.9	176	#364
Mishawum WB left	F	113.9	~148	#293	D	43.0	17	41
Mishawum WB thru/right	D	35.0	82	142	D	38.6	17	44
Rutherford (Route 99) NB left	F	113.1	~163	#313	E	60.2	126	203
Rutherford (Route 99) NB thru | thru/right	C	34.5	495	#680	C	21.6	359	465
Rutherford (Route 99) SB left	D	38.8	26	60	C	25.4	3	m4

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Rutherford (Route 99) SB thru | thru | thru/right	D	39.3	519	#664	D	38.3	512	581
53c. (S) Maffa Way/Rutherford Avenue (Route 99)	**D**	**43.7**			**C**	**22.9**		
Maffa EB left | left	E	70.6	~452	m#580	C	27.3	139	m150
Maffa EB right	C	24.6	427	m559	C	20.2	102	m111
Rutherford (Route 99) NB left	E	74.3	269	#447	C	29.9	6	m9
Rutherford (Route 99) NB thru | thru	D	49.8	457	#601	D	41.1	513	583
Rutherford (Route 99) SB thru | thru | thru/right	C	26.1	~555	m98	A	9.4	534	m509
53d. (S) Main Street/Rutherford Avenue (Route 99)	**E**	**73.2**			**E**	**72.8**		
Main EB left	F	184.5	~185	m#255	F	109.9	~163	m#205
Main EB thru/right	C	23.9	8	m9	D	41.0	147	m167
Main WB left/thru | thru/right	F	173.4	~303	#424	F	123.3	~341	#469
Rutherford (Route 99) NB left	F	122.9	~378	m#389	F	107.6	~291	#476
Rutherford (Route 99) NB thru | thru | thru/right	C	32.9	302	m323	D	42.7	346	#558
Rutherford (Route 99) SB left	E	57.5	139	m0	C	33.6	45	m58
Rutherford (Route 99) SB thru | thru | thru/right	E	60.5	~671	#767	E	73.7	~437	#678
53e. (S) Main Street/Alford Street	**C**	**31.5**			**C**	**32.5**		
Main WB left/thru | thru/right	B	17.1	335	m285	C	33.0	232	m228
Alford NB left	D	46.2	421	m517	B	19.9	78	m81
Alford NB left/thru/right	D	44.7	397	m493	C	30.0	233	m241
Alford SB left/thru/right	E	57.3	48	102	D	53.5	7	84
53f. (S) West Street/Rutherford Avenue (Route 99)	**B**	**16.4**			**B**	**19.1**		
West EB left	E	56.1	185	m227	E	79.0	235	#402
West EB right	E	63.0	0	m0	D	39.6	0	12
Rutherford (Route 99) NB left/thru | thru	A	7.9	262	m110	B	17.	787	m821
Rutherford (Route 99) SB thru | thru/right	B	20.0	686	#1139	B	11.8	437	534
54. (S) Austin Street/New Rutherford Avenue (Route 99)	**D**	**38.2**			**C**	**34.8**		
Gilmore Bridge EB left | left	D	50.1	326	#448	D	40.1	138	196

Intersection	**Friday p.m. Peak Hour**				**Saturday Afternoon Peak Hour**			
Gilmore Bridge EB thru	D	46.8	272	#404	D	41.2	158	250
Gilmore Bridge EB right	A	0.8	0	0	D	37.8	0	91
Austin Street WB left	D	47.1	81	141	D	50.8	66	119
Austin Street WB thru/right	E	73.2	186	#328	E	62.8	112	185
New Rutherford NB (Route 99) left	D	55.0	90	154	E	55.0	113	152
New Rutherford (Route 99) NB thru/right	E	67.9	79	157	B	16.0	80	35
New Rutherford (Route 99) SB left	D	48.6	43	86	D	38.8	22	55
New Rutherford (Route 99) SB thru | thru	D	36.8	191	261	C	33.7	181	248
New Rutherford (Route 99) SB right	B	17.4	224	360	B	18.4	245	410
55. (S) New Rutherford Avenue (Route 99)/Route 1 Ramps	**D**	**46.9**			**B**	**17.6**		
New Rutherford (Route 99) EB thru | thru	D	52.6	~874	#1125	B	16.5	603	783
New Rutherford (Route 99) EB right	E	64.7	~803	#1114	A	3.3	34	62
New Rutherford (Route 99) WB left| left	D	38.3	152	146	C	31.3	126	165
New Rutherford (Route 99) WB thru | thru	C	23.7	403	480	A	7.2	49	226
Route 1 ramp NB left | left	D	51.8	57	90	E	55.6	80	121
Route 1 ramp NB right | right	C	26.5	63	85	C	31.2	60	87
56. (S) New Rutherford Avenue (Route 99)/Chelsea Street (City Square)	**D**	**41.5**			**C**	**29.0**		
New Rutherford (Route 99) EB left	D	49.1	61	m57	E	64.5	137	m166
New Rutherford EB thru | thru	C	27.2	487	m482	B	12.5	230	353
New Rutherford EB right	E	77.4	616	m#635	D	35.3	537	#796
New Rutherford WB thru | thru	C	33.4	465	#673	B	19.1	187	301
New Rutherford WB right	C	23.9	68	183	B	17.6	0	64
Chelsea SB left	D	50.8	345	472	D	51.6	202	274
Chelsea SB thru	D	35.3	241	332	D	52.6	219	293
Chelsea SB right	C	28.6	0	57	D	38.8	0	56
57. (S) Monsignor O'Brien Highway (Route 28)/Edwin H.	**F**	**274.8**			**F**	**131.0**		

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Land Boulevard/Charlestown Avenue								
Monsignor O'Brien Highway (Route 28) EB left	F	453.2	~400	#586	F	163.5	~194	#350
Monsignor O'Brien Highway (Route 28) EB thru | thru | thru	D	40.1	193	238	D	39.9	185	230
Monsignor O'Brien Highway (Route 28) EB right	C	34.1	0	62	C	34.1	0	61
Monsignor O'Brien Highway (Route 28) WB left	F	248.6	~365	#555	F	164.8	~276	#455
Monsignor O'Brien Highway (Route 28) WB thru | thru	D	39.6	247	314	D	38.0	215	277
Monsignor O'Brien Highway (Route 28) WB right	D	41.0	145	271	C	32.7	41	104
Edwin H. Land NB left	F	859.3	~628	#836	F	111.4	~136	#278
Edwin H. Land NB thru | thru	F	766.4	~655	#786	F	486.6	~458	#583
Edwin H. Land NB right	F	81.7	84	#284	D	50.6	9	#136
Gilmore SB left/thru | thru/right	E	55.8	351	#476	E	55.4	350	#472

**de facto left-turn lane

(S) signalized intersection

(U) unsignalized intersection

m Volume for 95th percentile queue is metered by upstream signal.

~ Volume exceeds capacity. Queue is theoretically infinite. Queue shown is maximum after 2 cycles.

95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.

The LOS of the signalized intersections in each city are summarized graphically. Figure 4-67A and Figure 4-67B depict the capacity analysis summaries for both Friday p.m. peak hour and Saturday afternoon peak hour under Build conditions at intersections 1-17 and 18-26, respectively, located in Everett. Figure 4-68 shows the capacity analysis summaries for both Friday p.m. peak hour and Saturday afternoon peak hour under Build conditions at intersections 27-32, located in Chelsea and Revere. Figure 4-69 shows the capacity analysis summaries for both Friday p.m. peak hour and Saturday afternoon peak hour Buildconditions at intersections 33-44, located in Medford. Figure 4-70 shows the capacity analysis summaries for both Friday p.m. peak hour and Saturday afternoon peak hour Buildconditions at intersections 45-57, located in Somerville, Boston, and Cambridge. The detailed results and the detailed Synchro output areincluded in Appendix B. The results for each peak hour are described in the following sections.

4.4.4.1 FRIDAY P.M. PEAK HOUR BUILD (2023) TRAFFIC OPERATIONS

Under p.m. peak hour conditions, all of the study area intersections are found to operate at an acceptable overall LOS or an overall LOS consistent with No-Build Conditions, with the exception of the following intersections:

EVERETT

10. At ***Santilli Circle - East Intersection,*** the overall LOS worsens from LOS E to LOS F.

13. At ***Broadway(Route 99)/Norwood Street/Chelsea Street,*** the overall LOS worsens from LOS E to LOS F.

MEDFORD

34. At ***Fellsway West (Route 28)/Salem Street (Route 60),*** the overall LOS worsens from LOS D to LOS E.

42. At ***Wellington Circle – East Intersection,*** the overall LOS worsens from LOS E to LOS F. The Revere Beach Parkway (Route 16) westbound right-turn lane worsens from LOS E to LOS F.

4.4.4.2 SATURDAY AFTERNOON PEAK HOUR BUILD (2023) TRAFFIC OPERATIONS

Under Saturday peak hour conditions, all of the study area intersections are found to operate at an acceptable overall LOS or an overall LOS consistent with No Build Conditions, with the exception of the following intersections:

EVERETT

7. At ***Beacham Street/Broadway (Route 99),*** the overall LOS worsens from LOS D to LOS F. The Beacham Street westbound approach worsens from LOS D to LOS E. The Broadway northbound approach worsens from LOS E to LOS F. The Broadway Street southbound approach worsens from LOS C to LOS F.

10. At ***Santilli Circle - East Intersection,*** the overall LOS worsens from LOS D to LOS E.

16. At ***Ferry Street/Broadway (Route 99),*** the overall LOS worsens from LOS D to LOS E. The Broadway (Route 99) northbound and southbound left-turn/through lanes worsen from LOS E to LOS F.

MEDFORD

42a. At ***Wellington Circle – West Intersection,*** the overall LOS worsens from LOS E to LOS F.

4.4.5 BUILD "REAL" TRAFFIC OPERATIONS

In addition to analyzing the peak traffic of the roadway combined with the peak traffic of the Project, the peaks of which do not coincide, the study team analyzed the "real" Friday p.m. peak hour traffic under the Build conditions. The analysis uses traffic volumes that combine the No-Build Friday p.m. peak hour traffic volumes that reflect the peak hour of the roadway with the proportion of the Project traffic that would actually be generated during that hour. The study team calls this the Build "real" Friday p.m. peak hour.

4.4.5.1 BUILD "REAL" (2023) TRAFFIC VOLUMES

Figure 4-71 shows the variation of traffic over a Friday, illustrating the difference between the "real" and peak+peak conditions. Figure 4-72 shows the variation of traffic over a Saturday, illustrating the difference between the "real" and peak+peak conditions. The difference between the "Real" Build (2023) traffic volumes and the volumes that combine the roadway and Project peak volumes is substantial during the Friday p.m. peak hour, on the order of more than 500 vehicles entering and exiting. During the Saturday afternoon peak hour, the difference is substantially less. Therefore, the Build "Real" conditions traffic analysis only considered the Friday p.m. peak hour condition. As vehicles coming to and going from the Project Site get closer to it, their routes converge, ultimately arriving on Broadway (Route 99), on which the Project Site driveway is located. Due to this convergence of routes as they approach the Project Site, the difference in the Project-generated trips will have the greatest impact on locations that are fairly close to the Project Site. Therefore, the "Real" Build conditions analysis was performed only for the signalized intersections along Lower Broadway (Route 99), Santilli Circle, and the intersections in and around Sullivan Square in Boston.

Figure 4-73 shows the Build "Real" (2023) Friday p.m. peak hour volumes at selected signalized intersections along Broadway/Alford Street (Route 99) in Everett and Boston. Figure 4-74 shows the Build "Real" (2023) Friday p.m. peak hour volumes at Santilli Circle in Everett. Figure

4-75 shows the Build "Real" (2023) Friday p.m. peak hour volumes at Wellington Circle in Medford. Figure 4-76 shows the Build "Real" (2023) Friday p.m. peak hour volumes in the reconfigured Sullivan Square in Boston.

4.4.5.2 FRIDAY "REAL" P.M. PEAK HOUR BUILD (2023) TRAFFIC OPERATIONS

The sections that follow describe the capacity analysis of the roadways under the "Real" Build (2023) Friday p.m. peak hour conditions. Table 4-24 shows the capacity analysis results for the "Real" Build conditions.

The LOS of the selected locations are also summarized graphically. Figure 4-77depicts the capacity analysis summary of selected signalized intersections on Broadway/Alford Street (Route 99) in Everett and Boston under the Build (2023) "Real" Friday p.m. peak hour. Figure 4-78 shows the capacity analysis summary for the Build (2023) "Real" Friday p.m. peak hour. Figure 4-79shows the capacity analysis summary for the Build (2023) "Real" Friday p.m. peak hour. Figure 4-80 shows the capacity analysis summary for the Build (2023) "Real" Friday p.m. peak hour. The detailed results summary tables and the detailed Synchro output are included in Appendix B. The results are described in the following sections.

Table 4-24, Build (2023) "Real" Conditions Intersection Capacity Analysis Summary

Intersection	Friday p.m. Peak Hour			
	LOS	Delay (sec/veh)	50% Queue Length	95% Queue Length
(S) Horizon Way/ Broadway (Route 99)	**A**	**1.9**		
Horizon EB left |right	D	54.3	2	29
Broadway (Route 99) NB left	F	92.3	1	m2
Broadway NB (Route 99) thru | thru| thru	A	0.2	1	3
Broadway SB (Route 99) SB thru | thru/right	A	2.8	76	59
(S) Site Driveway/Mystic Street/Broadway (Route 99)	**C**	**23.0**		
Site Driveway EB left	C	32.8	23	47
Site Driveway EB left/thru	C	32.7	24	47

Intersection	Friday p.m. Peak Hour			
Site Driveway EB right	B	11.6	16	46
Broadway (Route 99) NB left	D	52.7	83	#184
Broadway (Route 99) NB thru | thru/right	A	6.3	10	#841
Broadway (Route 99) SB left	E	66.0	3	15
Broadway (Route 99) SB thru	D	37.6	551	#746
(S) Beacham Street/Broadway (Route 99)	**F**	**232.3**		
McDonalds EB left/thru	C	33.0	21	50
McDonalds EB right	C	32.2	0	0
Beacham WB left/thru/right	F	193.7	~273	#448
Broadway (Route 99) NB left/thru | thru/right	F	457.9	~776	#916
Broadway (Route 99) SB left/thru | thru/right	C	29.8	255	#845
(S) Bowdoin Street/Broadway (Route 99)	**B**	**18.1**		
Bowdoin EB left/right	D	47.6	28	78
Broadway (Route 99) NB left/thru | thru	C	27.6	320	m77
Broadway (Route 99) SB thru | thru/right	A	6.4	124	478
(S) Revere Beach Parkway (Route 16)/Santilli Highway/Mystic View Road/Route 99 Connector (aka Santilli Circle)– West Intersection	**B**	**19.9**		
Revere Beach Parkway (Route 16) EB thru | thru | thru	B	10.5	220	267
Revere Beach Parkway (Route 16) EB bear right (to Circle)	D	48.1	~528	#759
Revere Beach Parkway (Route 16) Route 16 WB thru | thru | thru	A	3.9	54	61
Rotary SB thru | thru/right	C	34.8	157	216
Rotary SB bear right	C	27.3	0	#241
10. (S) Revere Beach Parkway (Route 16)/Santilli Highway/Mystic View Road/Route 99 Connector (aka Santilli Circle) – East Intersection	**E**	**72.6**		
Revere Beach Parkway (Route 16) EB thru | thru | thru	A	4.8	61	68
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	B	11.0	230	280
Rotary NB thru | thru | thru	F	230.8	~427	#520

Intersection	Friday p.m. Peak Hour			
42a. (S) Mystic Valley/Revere Beach Parkway (Route 16)/Fellsway (Route 28)/ Middlesex Avenue (aka Wellington Circle) – West Intersection	**F**	**97.8**		
Mystic Valley Parkway (Route 16) EB thru | thru | thru | thru | thru/right	F	118.5	~430	#497
Mystic Valley Parkway (Route 16) WB left | left | left	F	124.3	~388	m#433
Mystic Valley Parkway (Route 16) WB thru | thru	C	23.3	299	m343
Fellsway (Route 28) SB left | left	F	285.1	~296	#407
Fellsway (Route 28) SB thru | thru | thru/right	E	65.4	136	#210
Middlesex SWB left | left | left/bear right	B	16.1	14	17
Middlesex SWB bear right	B	14.5	6	m12
42b. (S) Mystic Valley/Revere Beach Parkway (Route 16)/Fellsway (Route 28)/ Middlesex Avenue (aka Wellington Circle) – East Intersection	**E**	**79.4**		
Mystic Valley Parkway (Route 16) EB left | left	D	47.3	128	m108
Mystic Valley Parkway (Route 16) EB thru | thru | thru | thru	F	119.8	~584	m#172
Mystic Valley Parkway (Route 16) WB thru | thru | thru | thru | thru	D	35.9	414	#462
Mystic Valley Parkway (Route 16) WB right	F	81.7	~481	#708
Fellsway (Route 28) NB left	E	61.4	318	#536
Fellsway (Route 28) NB left/ thru | thru	F	97.9	~468	#606
Fellsway (Route 28) NB bear right	F	203.0	~558	#775
Fellsway (Route 28) NB right | right	C	27.8	409	#572
42c. (S) Mystic Valley/Revere Beach Parkway (Route 16)/Fellsway (Route 28)/ Middlesex Avenue (aka Wellington Circle) – North Intersection	**B**	**16.8**		
Fellsway (Route 28) NB thru | thru | thru	A	8.0	231	m187
Middlesex SWB thru | thru | thru | thru/right	D	36.9	118	151
51. (S) Dexter Street/Alford Street (Route 99)	**B**	**18.6**		

Intersection	Friday p.m. Peak Hour			
Driveway EB left/thru/right				
Dexter WB left/thru/right	E	57.5	177	257
Alford (Route 99) NB left	E	61.5	2	11
Alford (Route 99) NB thru | thru/right	B	15.5	513	#857
Alford (Route 99) SB thru | thru/right	B	15.7	293	#877
53a. (S) Main Street/Maffa Way/Cambridge Street/Alford Street (aka Sullivan Square)	**C**	**35.0**		
Maffa EB left/thru | thru/right	D	45.6	257	586
Maffa WB left	C	24.1	92	m123
Maffa WB right	C	23.4	182	m200
Cambridge NB thru	E	55.2	241	328
Cambridge NB right	A	9.4	67	139
Alford SB left/thru	B	16.4	61	m87
53b. (S) Mishawum Street/Rutherford Avenue (Route 99)	**D**	**38.6**		
Hood BP North EB thru	D	35.4	88	151
Hood BP North EB right	D	40.2	61	#202
Mishawum WB left	F	113.9	~148	#293
Mishawum WB thru/right	D	35.0	82	142
Rutherford (Route 99) NB left	F	113.1	~163	#313
Rutherford (Route 99) NB thru | thru/right	C	31.0	466	#645
Rutherford (Route 99) SB left	D	38.8	26	60
Rutherford (Route 99) SB thru | thru | thru/right	C	28.9	447	529
53c. (S) Maffa Way/Rutherford Avenue (Route 99)	**C**	**32.6**		
Maffa EB left | left	D	48.5	391	m#501
Maffa EB right	C	26.9	440	m563
Rutherford (Route 99) NB left	E	74.3	269	#447
Rutherford (Route 99) NB thru | thru	D	45.3	428	#556
Rutherford (Route 99) SB thru | thru | thru/right	A	9.0	52	m100

Intersection	Friday p.m. Peak Hour			
53d. (S) Main Street/Rutherford Avenue (Route 99)	**E**	**61.7**		
Main EB left	F	131.1	~149	m#237
Main EB thru/right	C	24.9	9	m10
Main WB left/thru | thru/right	F	173.4	~303	#424
Rutherford (Route 99) NB left	F	129.4	~379	m#443
Rutherford (Route 99) NB thru | thru | thru/right	C	31.8	285	m397
Rutherford (Route 99) SB left	E	55.7	131	m179
Rutherford (Route 99) SB thru | thru | thru/right	C	32.9	518	#628
53e. (S) Main Street/Alford Street	**C**	**29.4**		
Main WB left/thru | thru/right	B	14.1	300	m272
Alford NB left	D	46.1	393	m516
Alford NB left/thru/right	D	43.0	361	m482
Alford SB left/thru/right	E	57.3	48	102
53f. (S) West Street/Rutherford Avenue (Route 99)	**B**	**10.2**		
West EB left	E	56.3	139	m191
West EB right	D	53.0	0	m2
Rutherford (Route 99) NB left/thru | thru	A	5.4	138	m79
Rutherford (Route 99) SB thru | thru/right	B	10.7	432	686

**de facto left-turn lane
(S) signalized intersection
m Volume for 95^{th} percentile queue is metered by upstream signal.
~ Volume exceeds capacity. Queue is theoretically infinite. Queue shown is maximum after 2 cycles.
# 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.

The LOS of the locationsare summarized graphically. Figure 4-77 depicts the capacity analysis summary of selected intersections on Lower Broadway in Everett under the Build (2023) "Real" Friday p.m. peak hour. Figure 4-78 shows the capacity analysis summaryfor the Build "Real" Friday p.m. peak hour conditions at Santilli Circle in Everett. Figure 4-79 shows the capacity analysis summaryfor the Build "Real" conditions for the Friday p.m. peak hour at Wellington Circle in Medford. Figure 4-80 shows the capacity analysis summary for the Build "Real" Friday p.m.

peak hour conditions at Sullivan Square in Boston. The detailed results are tabulated in Appendix B, and the detailed Synchro output is also included in Appendix B.

Under the Friday p.m. Build "Real" peak, operations are much improved over the Build conditions, which represent a more conservative analysis. Significant improvements in operation are discussed below:

EVERETT

5. At **Beacham Street/Broadway (Route 99),** the overall LOS remains LOS F. However, the overall delay is slightly lower than the build conditions. All other signalized location along Lower Broadway (Route 99) will generally operate the same during the build conditions and the build 'real' peak conditions.

10. At ***Santilli Circle,*** both signalized intersections operate better under the build 'real' peak conditions than the build conditions. The western signal improves from an LOS C to LOS B under the real peak period. Similarly, the eastern signal improves from an LOS F to LOS E.

MEDFORD

42. At ***Wellington Circle,*** operations are improved under the 'real' peak conditions. However, the western and eastern intersection continue to operate at LOS F and LOS E, respectively.

BOSTON

53. All intersections within ***Sullivan Square*** continue to operate at the same LOS as in the Build conditions.

4.4.6 PARKING

The Project is providing 2,909 parking spaces on-site for patrons. Parking for employees, approximatly 750 spaces, will be provided off-site at three potential locations in Everett, Medford, and Malden.

For comparison purposes, a review of the parking supply at similar gaming facilities located in urban markets was conducted. The results are shown in Table 4-25. While the Aqueduct Casino has a significant amount of parking, observations at the site indicated that much of it is empty even during peak periods.

Table 4-25, Parking Comparison at Selected Gaming Facilities

Location	Gaming Positions		Public Transit Services	On-site Hotel?	On-Site Parking Supply
Sugarhouse Casino Philadelphia, PA	Slots Tables Total	1,602 354 1,956	Subway	No	1,820
Casino de Montreal Montreal, QC, Canada	Slots Tables Total	3,000 714 3,714	Subway	No	3,000
Resorts World Casino at Aqueduct New York, NY	Slots Tables Total	4,525 475 5,000	Subway	No	6,500
Wynn Resort in Everett Everett, MA	Slots Tables Total	3,072 900 3,972	Bus	Yes	2,909on-site for patrons 750 off-site for employees

The HSH-VAI team has completed a parking demand analysis of the Project. This analysis was performed following the methodologies outlined in the Urban Land Institute's (ULI's) *Shared Parking* manual and adjusted to account for: i) the interaction of uses to be located within the Project Site; and ii) the availability of alternative modes of transportation (i.e., public transportation, pedestrians, and bicycles). With specific regard to the gaming component of the Project, parking demand data obtained from a study conducted by Walker Parking Consultants for the Hollywood Park Redevelopment Project in Inglewood, California was used.

The parking demand analysis was developed for patrons and employees by hour of the day and month of the year. Table 4-26 and 4-27 show the summary of patron parking demand by time of day and month for Friday and Saturday, respectively. Detailed tables for each month are provided in Appendix B.

Based on this preliminary analysis, there will be times when the peak Patron parking demand will exceed the 2,909 space supply. As shown in Table 4-26, these peak demand times will occur during the late evenings (9:00 p.m. - 11:00 p.m.) in March, July, August, and late December. On Saturdays, as shown in Table 4-27, the peak demand times are also during the late evening period (9:00 p.m. - 12:00 a.m.) in all months except November and December.

During periods when the parking demand exceeds the supply on-site, the Proponent will valet patron vehicles to an off-site location, most likely the closest employee parking lot.

In addition to the provisions for valet parking at times when demand exceeds capacity, the Proponent is still considering how the on-site parking for patrons will be managed and whether any fee will be charged for on-site parking. The Proponent understands the need to balance the demands of patrons of the resort and users of the public open space along the waterfront with providing disincentives for commuters to view the Project parking garage as a commuter location. The Proponent is considering such measures as charging a fee for parking with an option to waive the fee through validation for patrons of the resort and open space.

The employee parking demand on weekdays and Saturdays, respectively, is shown in Table 4-28 and Table 4-29. Detailed tables for each month are provided in Appendix B. An adequate supply of employee parking will be provided off-site to serve the projected demands. Employees will travel to/from the Project site via employee shuttle buses.

Table 4-26, Shared Parking Demand by Time of Day and Month – Patron Parking Demand - Weekday

Month	6:00 a.m. [1]	7:00 a.m.	8:00 a.m.	9:00 a.m.	10:00 a.m.	11:00 a.m.	12:00 p.m.	1:00 p.m.	2:00 p.m.	3:00 p.m.	4:00 p.m.	5:00 p.m.	6:00 p.m.	7:00 p.m.	8:00 p.m.	9:00 p.m.	10:00 p.m.	11:00 p.m.	12:00 a.m.	Maximum
January	665	658	632	770	958	1,230	1,668	1,911	1,889	1,792	1,758	1,805	2,224	2,524	2,629	2,766	2,804	2,723	2,546	2,804
February	704	698	671	804	989	1,262	1,698	1,941	1,920	1,823	1,791	1,841	2,265	2,568	2,678	2,819	2,857	2,779	2,600	2,857
March	702	701	676	813	1,005	1,283	1,723	1,966	1,941	1,841	1,808	1,872	2,319	2,638	2,760	**2,908**	**2,943**	2,862	2,673	**2,943**
April	696	696	671	805	995	1,271	1,712	1,954	1,930	1,832	1,798	1,856	2,289	2,599	2,712	2,853	2,892	2,813	2,628	2,892
May	655	657	635	775	972	1,250	1,695	1,937	1,909	1,809	1,773	1,835	2,269	2,580	2,689	2,824	2,862	2,780	2,590	2,862
June	655	657	635	775	973	1,251	1,696	1,938	1,911	1,811	1,774	1,835	2,270	2,581	2,692	2,828	2,865	2,783	2,594	2,865
July	696	698	674	809	1,001	1,278	1,721	1,963	1,937	1,837	1,802	1,870	2,313	2,628	2,745	2,888	**2,926**	2,847	2,656	**2,926**
August	698	700	677	815	1,011	1,292	1,735	1,978	1,951	1,850	1,815	1,885	2,332	2,650	2,768	**2,908**	**2,944**	2,861	2,668	**2,944**
September	598	597	577	723	924	1,201	1,646	1,889	1,860	1,762	1,723	1,775	2,205	2,517	2,627	2,764	2,800	2,715	2,530	2,800
October	601	600	581	730	934	1,213	1,660	1,902	1,872	1,772	1,733	1,793	2,235	2,555	2,671	2,811	2,846	2,758	2,567	2,846
November	601	599	582	733	940	1,221	1,668	1,912	1,882	1,782	1,743	1,800	2,237	2,554	2,665	2,801	2,832	2,742	2,553	2,832
December	503	505	501	678	917	1,213	1,673	1,920	1,878	1,773	1,729	1,794	2,237	2,560	2,660	2,772	2,789	2,679	2,476	2,789
Peak December	503	505	501	678	917	1,213	1,673	1,920	1,878	1,773	1,729	1,794	2,237	2,560	2,660	2,772	2,789	2,679	2,476	2,789
Late December	706	705	675	802	986	1,281	1,752	2,007	1,989	1,897	1,855	1,893	2,309	2,596	2,708	2,868	**2,913**	2,842	2,657	**2,913**

1) For the hour starting at time indicated.
Bolded values indicate that demand will be greater than parking supply. When this ocpurs, the Proponent will valet patron vehicles to an off-site location, most likely the closest employee parking lot.

Table 4-27, Shared Parking Demand by Time of Day and Month – Patron Parking Demand - Saturday

Month	6:00 a.m. 1)	7:00 a.m.	8:00 a.m.	9:00 a.m.	10:00 a.m.	11:00 a.m.	12:00 p.m.	1:00 p.m.	2:00 p.m.	3:00 p.m.	4:00 p.m.	5:00 p.m.	6:00 p.m.	7:00 p.m.	8:00 p.m.	9:00 p.m.	10:00 p.m.	11:00 p.m.	12:00 a.m.	Maximum
January	724	692	641	795	1,024	1,381	1,943	2,065	2,439	2,068	2,014	2,243	2,587	2,704	2,742	2,810	**2,908**	2,833	2,656	**2,908**
February	767	735	679	828	1,055	1,412	1,971	2,094	2,471	2,099	2,047	2,279	2,629	2,750	2,793	2,866	**2,968**	2,895	2,716	**2,968**
March	765	737	685	840	1,074	1,435	1,999	2,123	2,499	2,123	2,069	2,312	2,688	2,827	2,886	**2,969**	**3,067**	**2,990**	2,799	**3,067**
April	760	733	680	834	1,067	1,426	1,989	2,114	2,491	2,116	2,060	2,297	2,658	2,787	2,837	**2,912**	**3,012**	**2,935**	2,748	**3,012**
May	713	691	645	805	1,047	1,407	1,975	2,101	2,475	2,098	2,039	2,278	2,640	2,770	2,817	2,885	**2,979**	2,898	2,705	**2,979**
June	713	690	644	805	1,047	1,407	1,975	2,102	2,476	2,100	2,041	2,278	2,640	2,771	2,820	2,890	**2,983**	**2,902**	2,710	**2,983**
July	759	734	683	839	1,075	1,435	2,000	2,125	2,501	2,123	2,067	2,311	2,684	2,821	2,876	**2,952**	**3,051**	**2,973**	2,779	**3,051**
August	761	736	686	845	1,084	1,446	2,013	2,139	2,516	2,138	2,081	2,327	2,702	2,841	2,897	**2,973**	**3,070**	**2,989**	2,792	**3,070**
September	650	627	586	752	997	1,357	1,926	2,051	2,422	2,048	1,987	2,218	2,574	2,705	2,751	2,822	**2,909**	2,826	2,639	**2,909**
October	653	630	591	760	1,007	1,369	1,940	2,064	2,434	2,058	1,998	2,236	2,606	2,745	2,798	2,873	**2,959**	2,874	2,681	**2,959**
November	652	630	590	762	1,011	1,374	1,947	2,073	2,446	2,071	2,010	2,243	2,605	2,741	2,789	2,861	2,945	2,858	2,666	**2,945**
December	543	530	508	708	986	1,362	1,953	2,085	2,457	2,079	2,008	2,244	2,606	2,743	2,783	2,838	2,898	2,789	2,579	2,898
Peak December	543	530	508	708	986	1,362	1,953	2,085	2,457	2,079	2,008	2,244	2,606	2,743	2,783	2,838	2,898	2,789	2,579	2,898
Late December	769	741	690	834	1,076	1,454	2,034	2,172	2,542	2,166	2,111	2,344	2,700	2,821	2,870	**2,931**	**3,033**	**2,968**	2,781	**3,033**

1) For the hour starting at time indicated.
Bolded values indicate that demand will be greater than parking supply. When this ocpurs, the Proponent will valet patron vehicles to an off-site location, most likely the closest employee parking lot.

Table 4-28, Shared Parking Demand by Time of Day and Month – Employee Parking Demand - Weekday

Month	6:00 a.m. 1)	7:00 a.m.	8:00 a.m.	9:00 a.m.	10:00 a.m.	11:00 a.m.	12:00 p.m.	1:00 p.m.	2:00 p.m.	3:00 p.m.	4:00 p.m.	5:00 p.m.	6:00 p.m.	7:00 p.m.	8:00 p.m.	9:00 p.m.	10:00 p.m.	11:00 p.m.	12:00 a.m.	Maximum
January	157	194	292	313	362	402	434	542	571	598	597	597	540	505	500	488	466	425	378	598
February	157	194	292	313	362	402	434	542	571	598	597	597	540	505	500	488	466	425	378	598
March	157	194	293	314	364	404	436	545	574	601	601	602	546	513	507	495	474	432	384	602
April	156	194	292	314	363	404	435	544	573	600	600	601	545	513	507	495	473	432	384	601
May	156	193	292	314	363	403	435	544	573	600	600	601	545	512	507	495	473	432	384	601
June	156	193	292	314	363	403	435	544	573	600	600	601	545	512	507	495	473	432	384	601
July	156	193	292	314	363	403	435	544	573	600	600	601	545	512	507	495	473	432	384	601
August	156	194	292	314	363	404	435	544	573	600	600	601	545	513	507	495	473	432	384	601
September	157	194	293	314	364	404	436	544	574	601	601	601	546	513	507	495	474	432	384	601
October	157	194	293	314	364	404	436	545	574	601	601	602	546	513	507	495	474	432	384	602
November	158	195	295	319	369	410	442	551	572	587	577	571	512	479	473	460	436	399	364	587
December	158	196	298	324	374	416	448	557	578	593	583	577	518	485	478	464	439	400	364	593
Peak December	158	196	298	324	374	416	448	557	578	593	583	577	518	485	478	464	439	400	364	593
Late December	158	195	296	319	369	410	442	551	572	587	577	572	512	479	473	460	436	399	364	587

1) For the hour starting at time indicated.

Table 4-29, Shared Parking Demand by Time of Day and Month – Employee Parking Demand - Saturday

Month	6:00 a.m. 1)	7:00 a.m.	8:00 a.m.	9:00 a.m.	10:00 a.m.	11:00 a.m.	12:00 p.m.	1:00 p.m.	2:00 p.m.	3:00 p.m.	4:00 p.m.	5:00 p.m.	6:00 p.m.	7:00 p.m.	8:00 p.m.	9:00 p.m.	10:00 p.m.	11:00 p.m.	12:00 a.m.	Maximum
January	157	188	258	282	328	367	400	508	537	565	571	582	556	542	537	527	502	468	410	582
February	157	188	258	282	328	367	400	508	537	565	571	582	556	542	537	527	502	468	410	582
March	158	189	260	284	331	369	403	511	541	568	575	588	564	551	547	536	511	476	417	588
April	157	189	259	284	330	369	402	510	540	568	574	588	564	551	546	536	510	476	417	588
May	157	189	259	283	330	369	402	510	540	568	574	588	564	551	546	536	510	476	417	588
June	157	189	259	283	330	369	402	510	540	568	574	588	564	551	546	536	510	476	417	588
July	157	189	259	283	330	369	402	510	540	568	574	588	564	551	546	536	510	476	417	588
August	157	189	259	284	330	369	402	510	540	568	574	588	564	551	546	536	510	476	417	588
September	157	189	260	284	330	369	403	510	541	568	575	588	564	551	546	536	510	476	417	588
October	158	189	260	284	331	369	403	511	541	568	575	588	564	551	547	536	511	476	417	588
November	158	190	263	289	336	376	410	517	547	575	581	595	570	557	552	540	514	477	417	595
December	159	191	265	294	342	383	417	524	554	582	588	602	576	562	557	545	517	478	417	602
Peak December	159	191	265	294	342	383	417	524	554	582	588	602	576	562	557	545	517	478	417	602
Late December	158	190	263	289	336	376	410	517	548	575	582	595	570	557	552	540	514	477	417	595

1) For the hour starting at time indicated.

4.4.7 PUBLIC TRANSPORTATION

The Project Site is ideally located to take advantage of public transportation resources in the area, including MBTA Orange Line service at Sullivan Square, Assembly Square, Wellington, and Malden Center stationsand MBTA bus service along Broadway (Route 104, Route 105, and Route 110). The Proponent is committed to providing a shuttle service between the Project Site and agreed upon MBTA Orange Line stations. In addition, the Project will include new docking facilities for water transportation services and provide water transportation service to locations in the Boston area.

Given these existing and proposed amenities, the Project's planned connection to the Mystic River Reservation and Parkway system, and the integration of a comprehensive Transportation Demand Management (TDM) as described in Section 4.5.4, many patrons and employees will use public transportation to travel to and from the Project.

As presented in Section 4.4.2.4 (Travel Mode Shares), it has been assumed that 10% of patrons and 20% of employees will arrive at the Project via the Orange Line. Because of the Proponent's commitment to give hiring priority to local residents and the convenience of established bus routes serving Broadway (Route 99), it is estimated that 10% of employees will use local bus routes to commute to work. While some local patrons may use neighborhood bus routes to travel to the Project, no patrons have been assigned to local bus routes in this analysis.

4.4.7.1 MBTA ORANGE LINE

The MBTA Orange Line is expected to be a primary public transit option for travel to the Project. The Proponent will institute shuttle bus service to transport both patrons and employees between certain stations and the Project.

Based on existing Orange Line ridership data, 80% of all Orange Line riders destined to the Project will originate from south of Sullivan Square, including transfers from other MBTA rail and bus services. It is assumed that all Project trips on the Orange Line originating from the south will prefer to exit at Sullivan Square Station rather than travelling further north to Wellington or Malden Center stations. The remaining 20% of Orange Line users are expected to originate from the north at Oak Grove or Malden Center stations (via commuter rail, local bus, or park and ride).

For analysis purposes, all Project Orange Line trips originating south of Sullivan Square are assumed to start their trip south of the "core" area, generally defined as the segments between Back Bay Station and

NorthStation. All trips originating north of Wellington Station are assumed to begin at Oak Grove.

Existing Orange Line passenger load and ridership data were obtained from the Central Transportation Planning Staff (CTPS) and MBTA. Then, directional inbound capacity downstream of each load point was established from comparing MBTA train schedules to the number of cars per train and the capacity of each car.

The new Project transit trips for the weekday Friday peak hour were added to the existing passenger loads to estimate loading under Build Conditions. Note that the Proponent expects the highest weekday visitation to occur on Fridays. Table 4-30 and Table 4-31 show the existing and projected future Orange Line passenger loads (defined as "capacity used") on a weekday between Back Bay and Oak Grove in the northbound and southbound directions, respectively.

The data in the tables were compiled for the period when passenger loads were closest to capacity between Sullivan Square and Wellington Station (7:00–8:00 p.m.). While passenger loads during this hour are typically lower than those experienced during the "peak commuter hour", the defined capacity of an Orange Line car is lower during off-peak periods, resulting in passenger loads that are closer to defined capacity.

Table 4-30, MBTA Orange Line Passenger Load, Weekday 7:00-8:00 p.m. – Northbound

Segment	Total Hourly Capacity[1)]	Existing Conditions		Build Conditions	
		Passengers	Capacity Used	Passengers	Capacity Used
Back Bay-Tufts	2,916	1,856	63.6%	2,055	70.5%
Tufts-Chinatown	2,916	2,074	71.1%	2,273	77.9%
Chinatown-Downtown	2,916	2,224	76.3%	2,423	83.1%
Downtown-State	2,916	2,437	83.6%	2,636	90.4%
State-Haymarket	2,916	2,287	78.4%	2,486	85.2%
Haymarket-North Station	2,916	2,211	75.8%	2,410	82.6%
North Station-Community College	2,088	2,297	78.8%	2,496	85.6%
Community College-Sullivan Square	2,088	2,237	107.1%	2,436	116.7%
Sullivan Square-Wellington	2,088	1,772	84.9%	1,772	84.9%
Wellington-Malden Center	2,088	1,429	68.4%	1,481	70.9%
Malden Center-Oak Grove	2,088	68	3.3%	120	5.7%

1) Based on a load capacity of 140% at "core" stations (Back Bay thru North Station) and 100% elsewhere.

Table 4-31, MBTA Orange Line Passenger Load, Weekday 7:00-8:00 p.m. – Southbound

Segment	Total Hourly Capacity[1]	Existing Conditions		Build Conditions	
		Passengers	Capacity Used	Passengers	Capacity Used
Oak Grove-Malden Center	2,088	33	1.6%	83	4.0%
Malden Center-Wellington	2,088	292	14.0%	342	16.4%
Wellington-Sullivan Square	2,088	424	20.3%	424	20.3%
Sullivan Square-Community College	2,088	638	30.6%	845	40.5%
Community College-North Station	2,088	797	27.3%	1,004	34.4%
North Station-Haymarket	2,916	942	32.3%	1,149	39.4%
Haymarket-State	2,916	1,054	36.1%	1,261	43.2%
State-Downtown	2,916	1,423	48.8%	1,630	55.9%
Downtown-Chinatown	2,916	2,040	70.0%	2,247	77.1%
Chinatown-Tufts	2,916	2,070	71.1%	2,277	78.1%
Tufts-Back Bay	2,916	2,106	72.2%	2,313	79.3%

1) Based on a load capacity of 140% at "core" stations (Back Bay thru North Station) and 100% elsewhere.

Defining capacity as 100% of seats, the passenger load currently exceeds capacity (107%) in the northbound direction between North Station and Community College Station (one station outside of the MBTA's "core" area). When Project trips are added, the load increases to 117%. Excess capacity would still be available on all other segments between Oak Grove and Back Bay stations.

During the 8:00 – 9:00 p.m. period (not shown in the tables), the passenger load would also exceed capacity between North Station and Community College in the northbound direction. On this segment, the Orange Line is currently at 94.4% of capacity during this period and the new Project trips would increase the passenger load to 103.4% of capacity.

Currently, the Orange Line operates at 10-minute headways (time between trains) between 6:30 p.m. and 9:00 p.m. In order for the Orange Line to operate at or below capacity during this period, the headway would need to be reduced to 8 minutes, similar to the weekday midday period. Headways of 8 minutes or less during the 6:30 p.m. to 9:00 p.m. period would allow the average passenger load to fall below

100% between North Station and Community College. Decreased headway would not only help the over capacity condition between North Station and Community College, but would improve service throughout the Orange Line during this period.

Table 4-32 shows the positive impact of increased capacity from an 8-minute headway compared to a10-minute headway between 7:00 p.m. and 9:00 p.m.

Table 4-32, MBTA Orange Line Passenger Load with Proposed Headway Reduction

Weekday Period [3]	10-minute Headway (Current)		8-minute Headway (Proposed)	
	Total Hourly Capacity[1]	Capacity Used[2]	Total Hourly Capacity[1]	Capacity Used[2]
7:00-8:00 p.m.	2,088	116.7%	2,610	93.3%
8:00-9:00 p.m.	2,088	103.9%	2,610	83.1%

1) Based on a load capacity of 140% at "core" stations (Back Bay thru North Station) and 100% elsewhere.
2) Based on conditions with new Project trips.
3) For northbound segment between North Station and Community College.

As shown in Table 4-32, decreasing the headway as described will increase the Orange Line capacity by 522 outside of the "core area". As a result, the projected Orange Line average passenger load would not exceed capacity between North Station and Community College.

On Saturdays, the Project will have higher visitation than on Fridays or other weekdays. The Orange Line, however, is generally less congested on Saturdays with a peak passenger load occurring between 4:00 – 5:00 p.m. Similar to the weekday analysis above, passenger loading was assessed for Saturday conditions.

Table 4-33 and Table 4-34 show the existing and projected Orange Line passenger loads between Back Bay and Oak Grove stations in the northbound and southbound directions, respectively. Due to track construction during the MBTA data collection period, data was not provided between Sullivan Square and Oak Grove stations. As a result, these segments are not included in the tables. However, because passenger loads on these segments are typically lower data than between most other Orange Line stations, the data gap should not affect the resulting peak load evaluation.

As shown in Table 4-33 and Table 4-34, passenger loadsin both directions are below capacity on all segments. Even with the additional Project trips, all loads would remain below 100%.

Table 4-33, MBTA Orange Line Passenger Load, Saturday 4:00-5:00 p.m. – Northbound

Segment	Total Hourly Capacity[1)]	Existing Conditions		Build Conditions	
		Passengers	Capacity Used	Passengers	Capacity Used
Back Bay-Tufts	2,916	1,734	59.5%	1,971	67.6%
Tufts-Chinatown	2,916	1,814	62.2%	2,051	70.3%
Chinatown-Downtown	2,916	1,978	67.8%	2,215	75.9%
Downtown-State	2,916	2,007	68.8%	2,244	76.9%
State-Haymarket	2,916	1,685	57.5%	1,922	65.9%
Haymarket-North Station	2,916	1,502	51.5%	1,739	59.6%
North Station-Community College	2,088	1,634	56.0%	1,871	64.2%
Community College-Sullivan Square	2,088	1,545	74.0%	1,782	85.3%

1) Based on a load capacity of 140% at "core" stations (Back Bay thru North Station) and 100% elsewhere.

Table 4-34, MBTA Orange Line Passenger Loads, Saturday 4:00-5:00 p.m. - Southbound

Segment	Total Hourly Capacity[1)]	Existing Conditions		Build Conditions	
		Passengers	Capacity Used	Passengers	Capacity Used
Sullivan Square-Community College	2,088	1,142	54.7%	1,381	66.1%
Community College-North Station	2,088	1,306	44.8%	1,545	53.0%
North Station-Haymarket	2,916	1,310	44.9%	1,549	53.1%
Haymarket-State	2,916	1,465	50.2%	1,704	58.4%
State-Downtown	2,916	1,790	61.4%	2,029	69.6%
Downtown-Chinatown	2,916	2,036	69.8%	2,275	78.0%
Chinatown-Tufts	2,916	1,873	64.2%	2,112	72.4%
Tufts-Back Bay	2,916	1,811	62.1%	2,050	70.3%

1) Based on a load capacity of 140% at "core" stations (Back Bay thru North Station) and 100% elsewhere.

4.4.7.2 MBTA BUS ROUTES

Unlike the Orange Line that is expected to serve both Project patrons and employees, the local bus system is expected to serve only employees.

As described in Section 4.4.2.4 (Travel Mode Shares), it has been assumed that 10% of Project employees will use local MBTA bus routes that already pass by the Project Site on Broadway (Route 99), including Route 104, Route 105, and Route 109. See Figure 4-24 for a map showing these routes. Route 104 and Route 109 operate from 5:00 a.m. to about 1:00 a.m. on weekdays and Saturdays, with headways between 12 and 30 minutes. Route 105 operates between 6:00 a.m. to about 7:30 p.m. on both weekdays and Saturdays, with headways of about 35 minutes. Sunday service is less frequent on all routes.

Year 2012 bus ridership data, with stop-by-stop boardings and alightings, was obtained from the MBTA for the three routes. Buses on these routes typically have 39 seats. For planning purposes, the MBTA defines the planning capacity of a bus at 140% of the seated capacity. Therefore, a bus has capacity for about 54 passengers at any one time before it is considered over capacity.

The new Project trips were assigned to each of the three each routes based on the distribution of ridership and areas served. Existing and Build Conditions ridership is shown in Table 4-35.

Table 4-35, MBTA Bus Route Ridership - Existing and Build Conditions

Segment	Existing Conditions		Build Conditions	
	Weekday	Saturday	Weekday	Saturday
Route 104 *Malden Center – Sullivan Sq. via Ferry St. & Broadway*	4,030	2,600	4,374	3,016
Route 105 *Malden Ctr. – Sullivan Sq. via Newland St. Housing*	970	750	1,054	868
Route 109 *Linden Sq. – Sullivan Sq. via Glendale Sq.*	3,270	1,960	3,544	2,274

To assess the impact of new Project bus passengers on these three bus routes, it is assumed that all new passengers board at the route terminus and alight at a new, enhanced bus stop on Broadway (Route 99) near the Project. Similarly, for the reverse trip, it is assumed that the Project passengers board at the Broadway (Route99) bus stop near the Project and ride the bus to its outbound terminus. This methodology will result in the maximum impact to the evaluation of the peak load bus ridership presented below. In reality, Project employees will board/alight at stops all along the route.

The new Project ridership was added to each specific bus trip throughout the day and the corresponding total number of on-board passengers was compared to the planning capacity of 54 passengers. Table 4-36 and Table 4-37s how the number of daily bus trips that have ridership in excess of the planning capacity for weekday and Saturday, respectively.

Table 4-36, MBTA Bus Routes – Bus Trip Capacity Load, Weekday

MBTA Route/Direction	Number of Bus Trips			
	Existing Conditions		Build Conditions	
	Under capacity	Over Capacity	Under capacity	Over Capacity
Route 104 *Malden Center – Sullivan Sq. via Ferry St. & Broadway*				
Inbound (toward Sullivan Sq.)	48	0	48	0
Outbound (toward Malden Center)	45	0	45	0
Total	93	0	93	0
Route 105 *Malden Ctr. – Sullivan Sq. via Newland St. Housing*				
Inbound (toward Sullivan Sq.)	18	0	18	0
Outbound (toward Malden Center)	18	0	18	0
Total	36	0	36	0
Route 109 *Linden Sq. – Sullivan Sq. via Glendale Sq.*				
Inbound (toward Sullivan Sq.)	53	1	53	1
Outbound (toward Linden Sq.)	55	1	55	1
Total	108	2	108	2

1) Based on a planning capacity of 140%.

Table 4-37, MBTA Bus Routes – Bus Trip Capacity Load, Saturday

MBTA Route/Direction	Weekday Number of Bus Trips			
	Existing Conditions		Build Conditions	
	Under capacity	Over Capacity	Under capacity	Over Capacity
Route 104 *Malden Center – Sullivan Sq. via Ferry St. & Broadway*				
Inbound (toward Sullivan Sq.)	33	0	31	2
Outbound (toward Malden Center)	33	0	31	2
Total	66	0	62	4
Route 105 *Malden Ctr. – Sullivan Sq. via Newland St. Housing*				
Inbound (toward Sullivan Sq.)	13	0	13	0
Outbound (toward Malden Center)	13	0	12	1
Total	26	0	25	1
Route 109 *Linden Sq. – Sullivan Sq. via Glendale Sq.*				
Inbound (toward Sullivan Sq.)	29	0	29	0
Outbound (toward Linden Sq.)	31	1	31	1
Total	108	1	108	1

1) Based on a planning capacity of 140%.

On weekdays, Route 104 and Route 105 do not experience any bus trips over capacity. Route 109 has two bus trips out of 110 that experience a peak load of greater than 54 passengers. These two trips are 1) the 5:00 a.m. inbound trip to Sullivan Square with projected Build peak load of 60 passengers and 2) the 4:15 p.m. outbound trip from Sullivan Square with a projected peak load of 58 passengers.

On Saturday, with less frequent service, the Route 104 will have four bus trips with peak load greater than 54 passengers. The two inbound trips to Sullivan Square occur at 8:00 a.m. and 9:30 a.m., with a peak load of projection of 57 and 54 passengers, respectively. The two outbound trips are the last two from Sullivan Square after midnight, with peak loads of 64 and 56, respectively.

Route 105 will only have one bus trip, occurring early evening, with a peak load above planning capacity. Route 109 will have one outbound trip over planning capacity 4:15 p.m. with 58 passengers.

For the bus trips with a peak load above the planning capacity, it is usually only about four passengers above the threshold. Given that only 1% of weekday bus trips and 3% of Saturday bus trips will experience a peak load over planning capacity and there are no consecutive bus trips experiencing conditions over capacity, it is concluded that these three bus routes have available capacity to meet the additional demand generated by the Project.

Because Route 104 and Route 109 do not operate between 1:00 a.m. and 5:00 a.m. (Route 105 does not operate after 7:30 p.m.), and Project employees will still need to arrive and depart from work during these hours, the Proponent is committed to establishing a night-owl shuttle route that will serve neighborhood employees. The night-owl route is still conceptual but the intent is to provide local employee with a transit option when the MBTA is closed. The route could run as a continuous loop as part of the remote employee parking lot shuttle or operate as door-to-door service when demand is low.

The Proponent will continue to work with the MBTA to assess bus operations along Broadway (Route 99). The Proponent is committed to enhancing bus stops on Broadway near the Project Site to encourage bus ridership as a safe, convenient commuting option for Project employees and neighborhood patrons. Bus stop locations near the site are shown in Figure 4-47. The figure also shows the routes for pedestrians from the bus stops into the site.

See Appendix B for the detailed bus route ridership worksheets.

4.4.7.3 PRIVATE SHUTTLE ROUTES

Three types of new shuttle service may be established by the Proponent to complement travel demand management strategies and encourage non-automobile travel to the Project Site.

The Proponent will provide transit shuttle service (for patrons and employees) between the Project and the MBTA's Orange Line. The final shuttle routes will be determined through on-going discussions with MBTA. Figure 4-82 shows a possible location for shuttle pick-up/drop-off at Wellington Station in Medford. It also shows the pedestrian route into the station and the route the shuttle would use to and from the Project

Site. Figure 4-83 shows a possible location for shuttle pick-up/drop-off at Malden Center Station in Malden. It also shows the pedestrian route into the station and the route the shuttle would use to and from the Project Site. Service may be expanded to include Logan International Airport, North Station, South Station, and other major transportation hubs and will be coordinated with the MBTA. It is estimated that this service will operate with about 10 minute headways.

Most employees will be required to park off-site and ride a shuttle bus to the Project Site. The Proponent plans to lease spaces in approximately three off-site parking facilities. An employee shuttle service will operate between the off-site lots and the Project Site, with stops in the local neighborhood to serve employees who live relatively close to the Project. It is estimated that this service will operate with about 15 minute headways.

Local employees will rely on MBTA Route 104, Route 105, and Route 107 to commute to the Project Site from nearby neighborhoods. MBTA bus service on Broadway (Route 99) does not operate between 1:00 a.m. and 5:00 a.m. (Route 105 does not operate after 7:30 p.m.). Given the 24/7 nature of the Project, the Proponent intends to provide some type of overnight transit service option when the MBTA is closed. Such a night-owl route is still conceptual but it may run as a continuous loop as part of the remote employee parking lot shuttle.

4.4.7.4 WATER TRANSPORTATION

The potential ferry ridership has been calculated based on projected total patron and employee daily person trip projections combined with the estimated mode share for water transportation. Demand projections are based on applying the estimated 3% water transportation mode share to the trip generation totals presented in Section 4.4.2. The projected supply of one-way ferry seats is based on detailed analysis prepared by Norris & Norris Associates for this Project.

The following estimates are intended as a basis for conceptual planning regarding the ferry model capacity and ridership. Further analysis will be prepared as the Project progresses into final permitting.

Ferry Trip Demand Analysis

It is estimated that 3% of all Project patron and employee trips will use the proposed water shuttle service from the South Boston waterfront and the Downtown Boston waterfront. The percentages of water transit users

will be the highest for those within walking distance and/or with transit connections at the two proposed central ferry departure points. A triangular ferry route (Project/Downtown Waterfront/South Boston Waterfront) is proposed to best serve these major visitor and employee markets.

On the Downtown waterfront, the heavy daily concentration of tourists, hotel travelers, and business district employees will provide a major source of patron discretionary trips to the Project. For employees, the primary market will be for those connecting from the Blue Line at Long Wharf, including residents of East Boston, Revere, and the North Shore, for whom a two seat trip to Everett has been estimated to be time and cost effective.

The South Boston Waterfront pool of Project patrons will include convention attendees and associated hotel users, as well as increasing numbers of business employees in the area. A smaller percentage of residents will also contribute to both patron and employee ferry transit usage. A shuttle ferry appears likely to offer a cost and time efficient one-seat ride to the Project in contrast to multi-seat transit connections (Silver Line/Red Line/ Orange Line and shuttle bus), or the unpredictable travel time of private vehicle trips through the heart of downtown Boston.

One-way Ferry Trips Available

Based on the proposed triangular service and projected schedule of operations, the number of available seats per day and per week can be calculated. The model assumes a startup level of service and available one-way seats provided by three custom built 49 passenger catamarans, operating at different frequencies during the 6:00 a.m. – 2:00 a.m. service hours:

- 6:00 a.m. to 9:00 a.m.: 3 vessels at 20 minute departure
- 9:00 a.m. to 3:00 p.m.: 2 vessels at 30 minute intervals
- 3:00 p.m. to 7:00 p.m.: 3 vessels at 20 minute intervals
- 7:00 p.m. to 2:00 a.m.: 1 vessel at 40 minute intervals

The number of one-way seats available equals the number of one-way trips per day times 49 passenger seats per trip. As shown in Table 4-38, 87 one-way trips per day would offer 4,263 seats per day or 29,841 seats per week.

Table 4-38, Water Transportation Capacity Available - Daily and Weekly

Time Period	One-way Vessel Trips per Day	Seats per Trip	Total Seats per Day	Total Seats per Week
6:00a.m. to 9:00a.m.	18	49	882	6,174
9:00a.m. to 3:00p.m.	24	49	1,176	8,232
3:00 p.m. to 7:00 p.m.	24	49	1,176	8,232
7:00p.m. to 2:00a.m.	21	49	1,029	7,203
Total	87	-	4,263	29,841

Estimated Daily Ferry Passenger Ridership

As discussed previously in this Chapter 4 regarding the overall Project traffic analysis, based on comparisons with trip patterns at comparable regional casino operations, it is projected that the combined patron and employee trips will be highest on Fridays and Saturdays. Correspondingly, water transportation usage would be expected to be higher on Fridays and Saturdays and lower on other days.

Estimated Daily Ridership Projections and Ferry Vessel Utilization

Using the peak weekend trip generation period on Saturdays, the peak daily vessel utilization can be calculated for combined patron and employee trips. Vessel utilization, shown in Table 4-39, is derived by dividing the total number of one-way seats available by the total number of ferry riders. Vessel utilization is calculated for the peak periods of Friday and Saturday, for Monday as the lowest trip day, and for an average day as shown in the table below. The peak daily ferry ridership on Saturday is estimated at 1,911 riders, while the smallest daily usage is expected on Monday estimated at 1,175 riders.

Table 4-39, Ferry Utilization

Day	Percent of Weekly Project person occurring on this day	Ferry Riders	Total Seats	Capacity Used
Friday	15%	**1,602**	4,263	38%
Saturday	18%	1,911	4,263	**44%**
Monday	11%	1,175	4,263	**28%**
Average Day	14%	1,495	4,263	**35%**

Ferry Ridership Demand Summary

Based on the number of available seats, the peak day usage (Saturday) would represent a 44% utilization rate of ferry seats proposed for the base ferry schedule with three vessels. The average daily ridership is estimated at 1,495 riders, or a 35% utilization rate. The total estimated ferry riders per week to and from the Project are estimated to be 10,700.

4.4.8 PEDESTRIAN AND BICYCLE CONDITIONS

As described previously (see Chapter 2), the Project will provide a shared use path (river walk) intended to provide continuous bicycle and pedestrian access and amenities along the waterfront. The Project proposes to connect the river walk to DCR's Gateway Park , which is located on the west side of the commuter rail tracks, with the Project's network through a much-improved connection under the commuter rail tracks. A new Gateway Park connector path would be improved with amenities such as an ADA-compliant surface, benches, landscaping, and lighting.

Loading and Service Accommodations

The Project has been designed to accommodate all loading and delivery functions on site in a safe and efficient manner. Designated loading areas have been provided within the Project Site to accommodate deliveries in a safe and efficient manner and separate from customer and pedestrian traffic. Truck routes and hours of deliveries will be scheduled to the extent possible to minimize truck activity during the commuter peak hours. Reasonable efforts will be made to use service vendors currently serving the Project vicinity in an effort to reduce the overall number of new trucks in the area. Truck routes to and from the site are shown in Figure 4-44.

4.5 PROJECTMITIGATION

4.5.1 OFF-SITE IMPROVEMENTS

The following sections describe the proposed off-site improvements to mitigate the impacts of the Project on the roadway network.

4.5.1.1 LOWER BROADWAY

Lower Broadway will be reconstructed between Revere Beach Parkway (Route 16) and the primary Project driveway in the context of a "Complete Streets" design to provide a general four-lane cross-section (two travel lanes per direction) with additional turning lanes provided at major intersections, sidewalks along both sides, and bicycle lanes. A

landscaped median and street trees will be provided where sufficient right-of-way is afforded. Existing traffic signals along the corridor will be reconstructed to include ornamental (period) poles, mast arms, lighting and appurtenances, and will include pedestrian and bicycle accommodations.

In order to improve intersection operations, the adjacent signalized intersections along Lower Broadway (Route 99) will be coordinated and the offsets shall be optimized. By extending the cycle lengths to 120 seconds and adjusting the phasing splits the operations at Beacham Street/Broadway (Route 99) and Bowdoin Street/Broadway (Route 99) may be improved.

4.5.1.2 LOWER BROADWAY TRUCK ROUTE, EVERETT

In an effort to reduce truck traffic along the segment of Lower Broadway (Route 99) between Beacham Street and the Boston City Line, Robin Street and Dexter Street will be improved to facilitate truck access to the commercial/industrial areas to the east of Lower Broadway (Route 99). These improvements will include rehabilitation of the pavement structure and surface, and improving corner radii to facilitate truck turning movements. Removal of truck traffic along this segment of Broadway (Route 99) will improve traffic flow and safety in the area.

4.5.1.3 SANTILLI CIRCLE, EVERETT

As an interim improvement, signs and pavement markings at and within the intersection will be upgraded to improve motorist guidance and safety, and to meet current design standards. In addition, the existing coordinated traffic signal system that comprises Santilli Circle will be upgraded and retimed to accommodate existing and projected future traffic volumes and patterns.

In addition, in order to accommodate both access to the Project Site and to address both current and projected future operational deficiencies at Santilli Circle, the Proponent proposed to replace the signalized rotary with a grade-separated, single-point, urban interchange. The Proponent will provide the necessary design and construction funding to complete the proposed improvements. The proposed improvements to Santilli Circle are shown in Figure 4-84A. 80 scale plans of the proposed improvements at Santilli Circle are shown in Figure 84-B, Figure 84-C, and Figure 84-D.

The re-routed traffic volumes for the Build "2023" Mitigated conditions in the Friday p.m. and Saturday afternoon peak hours are shown in Figure 4-85 and Figure 4-86, respectively.

Comparisons of existing (2013), No-Build (2023), and Build Mitigated (2023) volumes are shown graphically in Figure 4-87 and Figure 4-88 for Friday p.m. and Saturday afternoon peak hours, respectively.

4.5.1.4 SWEETSER CIRCLE, EVERETT

Signs and pavement marking at and within the intersection will be upgraded to improve motorist guidance and safety, and to meet current design standards. Additional geometric enhancements will be completed to allow for the addition of travel lanes on the approaches to the intersection in order to reduce vehicle queuing and motorist delays. Specifically, the Broadway and Main Street approaches will be widened to accommodate two (2) travel lanes approaching the Circle; the Route 16 connector will be widened and restriped to provide two (2) approach lanes; and the circulating area within Sweetster Circle will be reconfigured to function as a two (2) lane modern roundabout.

It is expected that the completion of the improvements to Santilli Circle described above (replacement of the intersection with a grade separated, single-point, urban diamond interchange) will also result in a direct improvement to traffic operations within Sweetser Circle.

Comparisons of existing (2013), No-Build (2023), and Build (2023) volumes are shown graphically in Figure 4-89 and Figure 4-90 for Friday p.m. and Saturday afternoon peak hours, respectively.

4.5.1.5 WELLINGTON CIRCLE, MEDFORD

In order to address both current and projected future operational deficiencies at Wellington Circle, the Proponent will commit to funding study and conceptual design of improvements.

Comparisons of existing (2013), No-Build (2023), and Build (2023) volumes are shown graphically in Figure 4-91 and Figure 4-92 for Friday p.m. and Saturday afternoon peak hours, respectively.

4.5.1.6 SULLIVAN SQUARE, BOSTON

As an interim improvement prior to advancement of the contemplated major reconstruction of Sullivan Square as envisioned by the City of

Boston, the following improvements are recommended: develop an optimal traffic signal timing plan for the Maffa Way/Cambridge Street intersection and interconnect and coordinate the traffic signal with the adjacent traffic signals; install a traffic control signal at the intersection of Rutherford Avenue at the traffic circle and interconnect and coordinate the new traffic signal with the Maffa Way/Cambridge Street traffic signal; and widen the Main Street approach to the intersection to provide two (2) approach lanes.

The Proponent is willing to commit funding for planning and conceptual design of the City of Boston's preferred alternative design of Sullivan Square and Rutherford Avenue.

Comparisons of No-Build (2023) and Build (2023) volumes are shown graphically in Figure 4-93 and Figure 4-94 for Friday p.m. and Saturday afternoon peak hours, respectively.

4.5.1.7 INTERSECTION IMPROVEMENTS

7. Beacham Street/Broadway (Route 99)

In order to improve operating conditions at this signalized intersection, optimal traffic signal timing and phasing plan will be developed. These improvements will be advanced in conjunction with the Lower Broadway corridor improvements defined previously.

13. Norwood Street/Chelsea Street/Broadway (Route 99)

The Broadway (Route 99) southbound shared left-turn/through movement worsens during the peak hours. During the Friday p.m. peak hour, the overall intersection operations worsen. Operational improvements at Norwood Street/Chelsea Street/Broadway (Route 99) can be achieved without having to do any major geometric changes. By adjusting the phasing splits at this intersection, delay for the intersection overall and the Broadway (Route 99) southbound left-turn/through movement can be improved.

16. Ferry Street/Broadway (Route 99)

The Broadway (Route 99) northbound and southbound shared left-turn/through movements worsen during the Saturday peak hour. Operational improvements at Ferry Street/Broadway (Route 99) can be achieved without having to do any major geometric changes. By adjusting the phasing splits at this intersection, delay for the intersection overall, the Ferry Street eastbound approach, and the Broadway (Route 99) northbound and southbound left-turn/through lanes can be improved.

29. Revere Beach Parkway (Route 16)/Washington Street

The Revere Beach Parkway (Route 16) eastbound and westbound through movements worsen during the peak hours. While this location already exceeds capacity under No-Build Conditions, mitigation can be done to lessen the impact of the added trips. Operational improvements at Revere Beach Parkway (Route 16)/Washington Street can be achieved without having to do any major geometric changes by updating the phasing splits.

32. Bell Circle – East Intersection

The Beach Street westbound right-turn lanes worsen during the Saturday peak hour. By adjusting the phasing splits at this intersection, the delay for this movement can be improved.

52. Cambridge Street/I-93 NorthboundOff-ramp

The overall intersection operations worsen during the Saturday peak hour and approach capacity during the Friday p.m. peak hour. Operational improvements at Cambridge Street/I-93 NB Off-ramp can be achieved by adjusting the phasing splits at this intersection to provide more time to the I-93 Northbound right-turn movement. By adjusting the phasing splits at this intersection, the overall delay can be improved.

4.5.2 BUILD MITIGATED TRAFFIC OPERATIONS

The study team reviewed locations where the Project's impacts on the transportation network as well as those locations that are already congested to determine whether any changes could improve traffic operations. The sections that follow describe the capacity analysis of the roadways under the Build (2023) Mitigated conditions. Table 4-40 shows the capacity analysis results for the Build (2023) Mitigated conditions.

The capacity analysis results are also summarized graphically for all signalized intersections. Figure 4-95 depicts the capacity analysis summaries for both Friday p.m. peak hour and Saturday afternoon peak hour under Build Mitigated conditions at mitigated intersections in Everett. Figure 4-96 shows the capacity analysis summaries for both Friday p.m. peak hour and Saturday afternoon peak hour under Build Mitigated conditions at mitigated intersections located in Chelsea and Revere. The detailed capacity analysis summary tables and Synchro output are included in Appendix B. The results for each peak hour are described in the following sections.

Table 4-40, Build (2023) Mitigated Intersection Capacity Analysis Summary

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
	LOS	Delay (sec/veh)	50% Queue Length	95% Queue Length	LOS	Delay (sec/veh)	50% Queue Length	95% Queue Length
2. (S) Site Driveway/Mystic Street/Broadway (Route 99)	**C**	**24.4**			**C**	**33.8**		
Site Driveway EB left	D	51.1	46	#109	D	54.6	58	#174
Site Driveway EB left/thru	D	51.7	46	#112	D	54.6	58	#174
Site Driveway EB right	B	19.1	77	#270	C	20.3	151	#323
Broadway (Route 99) NB left	D	53.6	164	#385	D	49.3	160	#434
Broadway (Route 99) NB thru | thru/right	A	6.3	13	#842	A	9.0	78	518
Broadway (Route 99) SB left	E	76.8	3	m2	E	59.4	4	m5
Broadway (Route 99) SB thru	C	32.9	575	m514	D	52.2	~613	m#669
7. (S) Beacham Street/Broadway (Route 99)	**F**	**163.5**			**E**	**78.1**		
McDonalds EB left/thru	D	41.3	26	59	D	42.9	36	75
McDonalds EB right	D	40.2	0	0	D	41.1	0	9
Beacham WB left/thru/right	F	267.2	~359	#550	F	194.7	~289	#471
Broadway (Route 99) NB left/thru | thru/right	F	270.1	~890	#1020	F	121.3	~667	#786
Broadway (Route 99) SB left/thru | thru/right	D	45.6	294	#1033	C	20.7	137	#992
8. (S) Bowdoin Street/Broadway (Route 99)	**C**	**22.5**			**B**	**15.9**		
Bowdoin EB left/right	D	54.5	40	93	D	54.0	56	114
Broadway (Route 99) NB left/thru | thru	D	35.9	351	m139	C	21.6	331	m276
Broadway (Route 99) SB thru | thru/right	A	7.2	154	574	A	7.8	165	614
10a. (S) Revere Beach Parkway (Route 16)/Santilli Highway/Mystic View Road/Route 99 Connector (aka Santilli Circle)– West Intersection	**C**	**24.7**			**C**	**25.7**		
Mystic View EB left | left	D	48.0	109	155	D	54.2	211	274
Mystic View EB thru | thru	C	20.1	43	67	B	19.0	54	110
Frontage WB left	C	25.2	18	m41	C	20.9	7	m12
Frontage WB thru | thru	A	8.4	17	27	A	8.4	16	25

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
Frontage WB right	A	0.6	224	317	A	0.5	164	246
Revere Beach Parkway (Route 16) NB left	C	26.9	107	168	C	28.2	139	211
Revere Beach Parkway (Route 16) SB left | left	D	36.1	363	447	C	29.1	215	274
10b. (S) Revere Beach Parkway (Route 16)/Santilli Highway/Mystic View Road/Route 99 Connector (aka Santilli Circle) – East Intersection	**C**	**33.8**			**C**	**31.9**		
Frontage EB left	D	43.7	178	m238	C	32.6	119	179
Frontage EB thru | thru	D	37.0	422	491	C	31.8	317	403
Frontage WB thru | thru | thru/right	C	29.8	169	211	C	33.3	164	206
Revere Beach Parkway (Route 16) NB thru	C	23.6	22	47	C	23.4	18	42
Santilli SB left	C	23.3	13	33	C	22.9	1	8
Santilli SB right	C	23.7	0	41	C	23.3	0	33
13. (S) Norwood Street/Chelsea Street/Broadway (Route 99)	**E**	**75.7**			**D**	**37.5**		
Norwood EB left	D	38.7	56	109	C	32.0	30	85
Norwood EB thru	D	49.2	122	#234	D	36.2	62	149
Norwood EB right	D	38.6	49	98	C	33.0	37	99
Chelsea WB left	D	50.1	126	202	D	38.4	86	#221
Chelsea WB right	D	42.0	79	140	C	31.3	42	114
Broadway (Route 99) NB thru/right	B	14.9	95	m#600	C	27.0	198	#560
Broadway (Route 99) SB left/thru	F	183.9	~463	#793	D	50.3	234	#654
16. (S) Ferry Street/Broadway (Route 99)	**-**	**-**	**-**	**-**	**D**	**45.1**		
Ferry EB left/thru | thru/right	-	-	-	-	D	50.6	103	#280
Ferry WB left	-	-	-	-	C	29.1	52	#162
Ferry WB thru	-	-	-	-	C	25.8	130	#344
Ferry WB right	-	-	-	-	C	20.1	0	51
Broadway (Route 99) NB left/thru	-	-	-	-	E	60.5	187	#583
Broadway (Route 99) NB right	-	-	-	-	B	13.8	29	100
Broadway (Route 99) SB	-	-	-	-	E	63.3	210	#635

Intersection	Friday p.m. Peak Hour				Saturday Afternoon Peak Hour			
left/thru								
Broadway (Route 99) SB right	-	-	-	-	B	12.6	14	55
29. (S) Revere Beach Parkway (Route 16)/Washington Street	**E**	**76.0**			**E**	**68.1**		
Revere Beach Parkway (Route 16) EB left	F	106.8	~286	#487	F	102.9	~193	#356
Revere Beach Parkway (Route 16) EB thru | thru | thru/right	F	97.1	~641	#778	E	65.1	~482	#631
Revere Beach Parkway (Route 16) WB left	F	95.0	128	m#188	E	68.4	69	m83
Revere Beach Parkway (Route 16) WB thru | thru | thru/right	E	57.2	504	m#624	E	79.1	~487	m#589
Washington NB left/thru/right	E	56.6	263	#665	D	42.1	198	#573
Washington SB left/thru	D	40.8	191	#501	C	32.6	130	#392
Washington SB right	D	36.1	128	#293	C	30.4	80	#225
32. (S) Beach Street/Everett Street/Route 1A/Route 16/Route 60 (aka Bell Circle) – East Intersection	-	-	-	-	**E**	**62.2**		
Beach WB right | right	-	-	-	-	D	49.3	170	#358
NB Rotary thru | thru (continue in rotary)	-	-	-	-	B	15.6	0	m0
NB Rotary right | right (onto Beach EB)	-	-	-	-	F	86.3	62	m34
51. (S) Dexter Street/Alford Street (Route 99)	**C**	**23.4**			**B**	**12.3**		
Driveway EB left/thru/right								
Dexter WB left/thru/right	E	57.5	177	257	E	57.7	147	223
Alford (Route 99) NB left	E	61.5	2	11	E	61.5	2	11
Alford (Route 99) NB thru | thru/right	C	21.0	672	#1118	A	7.0	193	302
Alford (Route 99) SB thru | thru/right	C	20.9	370	#1085	B	11.5	159	#1021

**de facto left-turn lane

(S) signalized intersection

m Volume for 95th percentile queue is metered by upstream signal.

~ Volume exceeds capacity. Queue is theoretically infinite. Queue shown is maximum after 2 cycles.

95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.

4.5.2.1 FRIDAY P.M.PEAK HOUR BUILD (2023) MITIGATED TRAFFIC OPERATIONS

Under p.m. peak hour conditions, the following study area intersection operations have improved due to mitigation:

EVERETT

1. At **Beacham Street/Broadway (Route 99),** the overall LOS remains LOS F. However, the overall delay decreases significantly.

10. At ***Santilli Circle - East Intersection,*** the overall LOS improves from LOS F to LOS C.

13. At ***Norwood Street/Chelsea Street/Broadway (Route 99),*** the overall LOS improves from LOS F to LOS E.

CHELSEA

29. At ***Revere Beach Parkway (Route 16)/Washington Street,*** the overall LOS improves from LOS F to LOS E. The Revere Beach Parkway (Route 16) westbound through and through/right-turn movements improve from LOS F to LOS E. The Washington Street northbound approach worsens from LOS D to LOS E.

4.5.2.2 SATURDAY AFTERNOONPEAK HOUR BUILD (2023) MITIGATED TRAFFIC OPERATIONS

Under Saturdayafternoon peak hour conditions, the following study area intersection operations have improved due to mitigation:

EVERETT

2. At ***Site Driveway/Mystic Street/Broadway (Route 99),*** the overall LOS improves from LOS D to LOS C. The Broadway (Route 99) southbound through movement improves from LOS E to LOS D.

7. At ***Beacham Street/Broadway (Route 99),*** the overall LOS improves from LOS F to LOS E. The Broadway (Route 99) southbound approach improves from LOS F to LOS C.

10. At ***Santilli Circle – East Intersection,*** the overall LOS improves from LOS E to LOS C. At ***Santilli Circle – West Intersection,*** the overall LOS improves from LOS E to LOS C.

13. At ***Norwood Street/Chelsea Street/Broadway (Route 99),*** the overall LOS remains LOS D, but the Broadway (Route 99) southbound approach improves from LOS F to LOS D.

16. At ***Ferry Street/Broadway (Route 99),*** the overall LOS improves from LOS E to LOS D. The Ferry Street eastbound approach improves from LOS E to LOS D. The Broadway (Route 99) northbound and southbound left-turn/through lanes improve from LOS F to LOS E.

CHELSEA

29. At ***Revere Beach Parkway (Route 16)/Washington Street,*** the overall LOS improves from LOS F to LOS E.

REVERE

32. At ***Bell Circle – East Intersection,*** the overall LOS remains LOS E, but the Beach Street westbound right-turn lanes improve from LOS E to LOS D.

4.5.3 BUILD MITIGATED “REAL” TRAFFIC OPERATIONS

In addition to analyzing the peak traffic of the roadway combined with the peak traffic of the Project, the peaks of which do not coincide, the study team analyzed the “real” Friday p.m. peak hour traffic under the Build Mitigated conditions. The analysis uses traffic volumes that combine the No-Build Friday p.m. peak hour traffic volumes that reflect the peak hour of the roadway with the proportion of the Project traffic that would actually be generated during that hour. The study team calls this the Build “real” Friday p.m. peak hour. In the Build “Real” Mitigated analysis, the study team only analyzed selected intersections along Broadway/Alford Street (Route 99) in Everett and Boston and Santilli Circle in Everett, both for which mitigation is proposed.

Figure 4-97 shows the Build “Real” Mitigated Friday p.m. peak hour traffic volumes at Santilli Circle, which is proposed to be reconstructed as a grade-separated single-point urban interchange.

The capacity analysis results are summarized graphically in Figure 4-98 and Figure 4-99 for the selected Broadway/Alford Street (Route 99) intersections and Santilli Circle, respectively.

Table 4-41, Build (2023) Mitigated "Real" Conditions Intersection Capacity Analysis Summary

Intersection	Friday p.m. Peak Hour			
	LOS	Delay (sec/veh)	50% Queue Length	95% Queue Length
2. (S) Site Driveway/Mystic Street/Broadway (Route 99)	**B**	**19.3**		
Site Driveway EB left	C	32.6	23	46
Site Driveway EB left/thru	C	32.5	24	47
Site Driveway EB right	B	10.5	11	42
Broadway (Route 99) NB left	D	53.1	84	#184
Broadway (Route 99) NB thru | thru/right	A	6.5	13	#841
Broadway (Route 99) SB left	E	76.7	3	m3
Broadway (Route 99) SB thru	C	27.7	540	m#665
7. (S) Beacham Street/Broadway (Route 99)	**F**	**138.0**		
McDonalds EB left/thru	D	41.3	26	59
McDonalds EB right	D	40.2	0	0
Beacham WB left/thru/right	F	254.8	~348	#538
Broadway (Route 99) NB left/thru | thru/right	F	227.4	~806	#938
Broadway (Route 99) SB left/thru | thru/right	C	30.3	250	#925
8. (S) Bowdoin Street/Broadway (Route 99)	**B**	**17.0**		
Bowdoin EB left/right	D	54.5	40	93
Broadway (Route 99) NB left/thru | thru	C	24.8	300	m123
Broadway (Route 99) SB thru | thru/right	A	6.6	135	500
10a. (S) Revere Beach Parkway (Route 16)/Santilli Highway/Mystic View Road/Route 99 Connector (aka Santilli Circle)– West Intersection	**C**	**24.1**		
Mystic View EB left | left	D	48.8	110	155
Mystic View EB thru | thru	C	20.1	43	67
Frontage WB left	C	25.7	18	m44

Intersection	Friday p.m. Peak Hour			
Frontage WB thru | thru	A	8.4	17	27
Frontage WB right	A	0.6	206	300
Revere Beach Parkway (Route 16) NB left	C	26.9	335	414
Revere Beach Parkway (Route 16) SB left | left	C	34.3	107	168
10b. (S) Revere Beach Parkway (Route 16)/Santilli Highway/Mystic View Road/Route 99 Connector (aka Santilli Circle) – East Intersection	**C**	**33.4**		
Frontage EB left	D	43.9	164	m239
Frontage EB thru | thru	D	36.6	400	468
Frontage WB thru | thru | thru/right	C	29.2	162	204
Revere Beach Parkway (Route 16) NB thru	C	23.6	22	47
Santilli SB left	C	23.3	13	33
Santilli SB right	C	23.7	0	41
51. (S) Dexter Street/Alford Street (Route 99)	**B**	**18.7**		
Driveway EB left/thru/right				
Dexter WB left/thru/right	E	57.5	177	257
Alford (Route 99) NB left	E	61.5	2	11
Alford (Route 99) NB thru | thru/right	B	15.5	513	#857
Alford (Route 99) SB thru | thru/right	B	15.9	303	#877

**de facto left-turn lane
(S) signalized intersection
m Volume for 95th percentile queue is metered by upstream signal.
~ Volume exceeds capacity. Queue is theoretically infinite. Queue shown is maximum after 2 cycles.
# 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.

4.5.3.1 FRIDAY "REAL" P.M. PEAK HOUR BUILD (2023) MITIGATED TRAFFIC OPERATIONS

EVERETT

5. At ***Broadway/Beacham Street,*** the overall LOS remains LOS F. However, the overall delay is much improved under mitigated

conditions. The 'real' peak mitigated operations are slight better than the 'real' peak unmitigated conditions.

11. At ***Santilli Circle,*** the LOS under the 'real' peak and 'real' peak mitigated are comparable and operate at LOS C under both conditions.

4.5.4 TRANSPORTATION DEMAND MANAGEMENT MEASURES

Overall, the Project's impact on the transportation infrastructure is expected to be adequately mitigated through the planned transportation infrastructure improvements that will be completed in conjunction with the Project; however, the following pedestrian and bicycle improvements/accommodations, Transportation Demand Management (TDM) measures, and trip reduction strategies are proposed with the goal of further minimizing the Project's overall impact.

4.5.4.1 PEDESTRIAN IMPROVEMENTS

As part of the Project, the Proponent will define and enhance pedestrian facilities as follows:

- Sidewalks and pedestrian promenade areas will be provided within the Project Site that will connect to the sidewalk infrastructure along Lower Broadway (Route 99).
- Lighting will be provided within the Project Site and around building perimeters.
- Full handicapped access will be provided within the Project Site and along proposed internal circulating roadways, including ramps for barrier-free access where appropriate; pedestrian crosswalks, pushbuttons and phasing will be provided at all signalized intersections constructed or modified in conjunction with the Project where sidewalks and crosswalks are provided; and crosswalks and associated pedestrian crossing warning signs will be installed at and in advance of pedestrian crossing locations as appropriate, and will be designed and installed in accordance with the *Manual on Uniform Traffic Control Devices* (MUTCD).[3]
- Existing pedestrian traffic signal equipment (pushbuttons and indications) will be upgraded/replaced at all signalized intersections

[3] *Manual on Uniform Traffic Control Devices (MUTCD);* Federal Highway Administration; Washington, DC; 2009.

to be modified in conjunction with the Project in order to meet current design standards for accessibility.

- Pedestrian phase timing will be reviewed and adjusted as may be necessary to meet current MUTCD design standards at all signalized intersections within the study area where such accommodations are present.

- Everett/DCR Mystic River Parkway trail system will be extended to the Project Site to allow pedestrian and bicycle access to and from Wellington Station on the MBTA Orange Line subway system. These accommodations are consistent with those that will be constructed as a part of MassDOT's reconstruction of the Woods Memorial Bridge over the Malden River, which includes a pedestrian and bicycle connection over the Malden River parallel to Revere Beach Parkway (Route 16).

4.5.4.2 BICYCLE ACCOMMODATIONS

The Project will include the installation of bicycle racks or storage areas within the secure parking garage for use by resort guests and employees. Signs will be provided within the Project Site that will direct bicyclists to the bicycle parking area and to both the multi-use path and the Lower Broadway bicycle route that are to be constructed as a part of the Project. The Project Site driveways and circulating roadways within the Project Site will provide sufficient width to accommodate bicycle travel in a shared travelled-way configuration.

All traffic signals to be constructed or physically modified in conjunction with the Project will include bicycle detection and associated signs and pavement markings, if and to the extent feasible and appropriate. In addition, the multi-use pathway system constructed as a part of the DCR Mystic River Parkway will be extended to the Project Site and will link to the planned bicycle lanes to be constructed along Lower Broadway as a part of the Project. These facilities will be complemented by the bicycle accommodations that are planned as a part of MassDOT's reconstruction of the Woods Memorial Bridge, which includes bicycle lanes and will allow for continuous bicycle access between Lower Broadway, Wellington Station, and the northern portion of the Mystic River Parkway.

4.5.4.3 TRAFFIC REDUCTION STRATEGIES

In order to reduce single occupant vehicle (SOV) travel to the Project Site and encourage the use of alternative modes of transportation, the Proponent will make available to employees and resort guests information and assistance regarding a range of traffic reduction measures, as detailed in the following paragraphs.

Ridesharing Programs - Ridesharing refers to encouraging commuters to ride in vehicles with other commuters rather than drive alone to work. The most common forms of ridesharing are carpools and vanpools, and the use of public transportation services. The benefits of such programs include less congestion, reduced fuel consumption, and better air quality. Keys to the success of such programs typicallyinclude:

- Carpool/vanpool matching programs;
- Dissemination of promotional materials; and
- Newsletters about the program.

The Project will implement these measures in coordination with MassRIDES, which provides administrative and organizational assistanceregarding employee commuting services and informational packets of commuting alternatives to be made available to employees and resort guests. The Project will encourage employees to participate in MassRIDES' NuRide program which rewards employees that choose to walk, bicycle, carpool, vanpool, or use public transportation.

- A Transportation Coordinator will be assigned for the Project;
- MBTA bus stops will be provided along Lower Broadway at the primary driveway;
- Fixed-route shuttle bus service will be provided to and from the Project Site and the MBTA Orange Line stations at Wellington Station and at Sullivan Square. This service may be expanded to include service to Logan International Airport, North Station, South Station and other major transportation hubs, and will be coordinated with Everett and the MBTA;
- Water shuttle service to the Project Site would be provided through a private service. A dock to accommodate water transportation facilities will be provided as a part of the Project;

- A touch-and-go dock will be provided as a part of the Project for transient boat access to the Project Site;
- Provide on-site sale of *Charlie Cards* for employees and for guests of the resort;
- Make available to employees and resort guests information regarding public transportation services, maps, schedules and fare information;
- Promote the use of public transportation to resort guests in website based materials including links to the appropriate homepages of the MBTA, MassRIDES, and Massport;
- Participate in the MBTA Corporate Pass Program to the extent practical and as allowable pursuant to commercial tenant lease requirements;
- Provide electric vehicle charging stations within the proposed parking garage;
- Coordinate with Zipcar to provide car sharing services at the Project Site;
- Provide preferential parking for car/vanpools and alternatively fueled vehicles;
- Offer a "Guaranteed-Ride-Home" in case of emergency to employees that commute to the Project by means other than private automobile; and
- Provide a periodic newsletter or bulletin concerning commuting options.

In addition, the Proponent will explore with Everett and the MBTA provision of a stop on the MBTA Commuter Rail system to serve both Everett and the Project.

4.5.4.4 ANNUAL MONITORING AND REPORTING PROGRAM

The Proponent will conduct a post-development traffic monitoring and employee survey program in order to evaluate the success and to refine the elements of the TDM program. The monitoring program will include obtaining traffic volume information at the driveways serving the Project and an employee and hotel guest survey of commuting modes. The

results of the annual monitoring program will be provided to MassDOT and Everett. The monitoring program will commence upon full completion and occupancy of the Project and will continue for a period of 5years thereafter.

4.5.4.5 WATER TRANSPORTATION OPPORTUNITIES

As discussed in greater detail in Sections 4.4.1.5 and 4.4.7.4 above, the Project Site appears to have potential for passenger services connecting to Inner Harbor ferry terminal locations. The Project will provide a multi-purpose dock and related navigation improvements to serve ferry and water taxi passengers. The Project also proposes to support provision of a scheduled water shuttle service from the Downtown waterfront and the World Trade Center on the South Boston waterfront. Such a passenger service, in coordination with the land-based transit system, is expected to provide an attractive alternative to driving for a portion of the Project's patrons and employees.

4.6 CONCLUSIONS

The analysis contained in this DEIR demonstrates that the impacts of the Project on the roadway and transit networks can be mitigated, and proposes a transportation improvement program to do so. These improvements will afford sufficient capacity to accommodate the additional traffic demands that may be associated within the Project in a safe and efficient manner.

Figure 4-1
Locus Map
Source: Howard/Stein-Hudson Associates, Inc., 2013

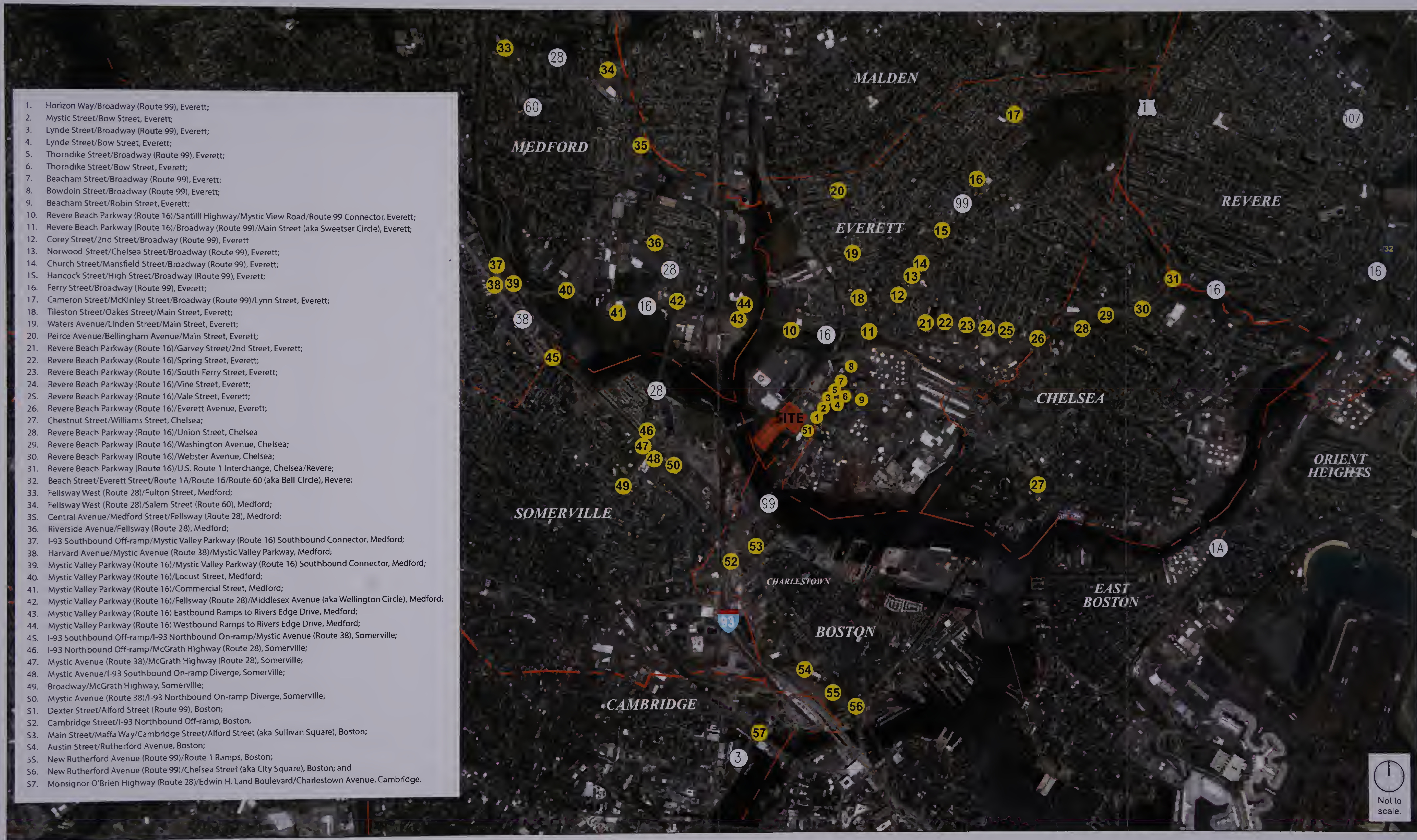


Figure 4-2
Study Area Map
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-3A
Existing (2013) Friday p.m. Peak Hour (4:30 – 5:30 p.m.) Traffic Volumes, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

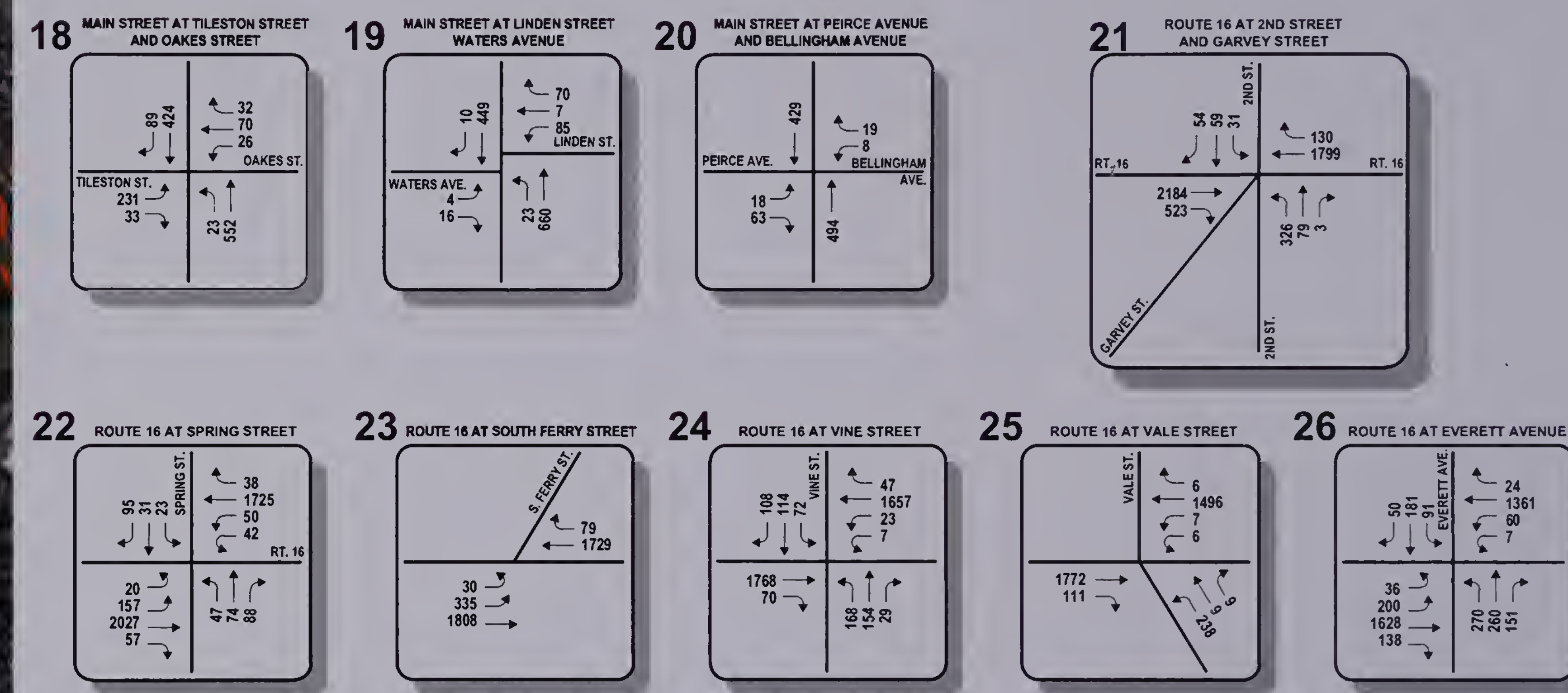


Figure 4-3B
Existing (2013) Friday p.m. Peak Hour (4:30 – 5:30 p.m.) Traffic Volumes, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

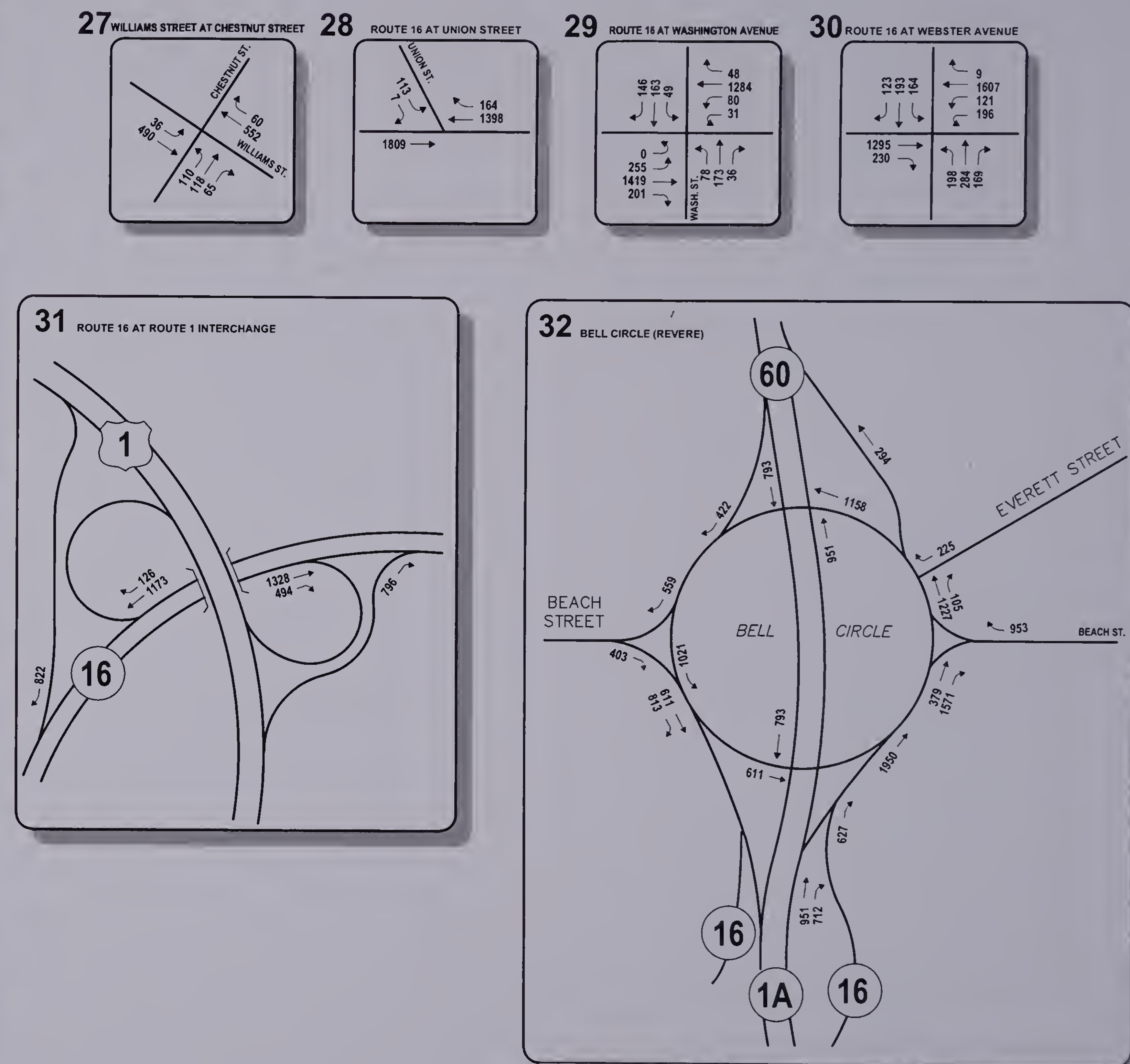


Figure 4-4
Existing (2013) Friday p.m. Peak Hour (4:30 – 5:30 p.m.) Traffic Volumes, Chelsea and Revere
Source: Howard/Stein-Hudson Associates, Inc., 2013

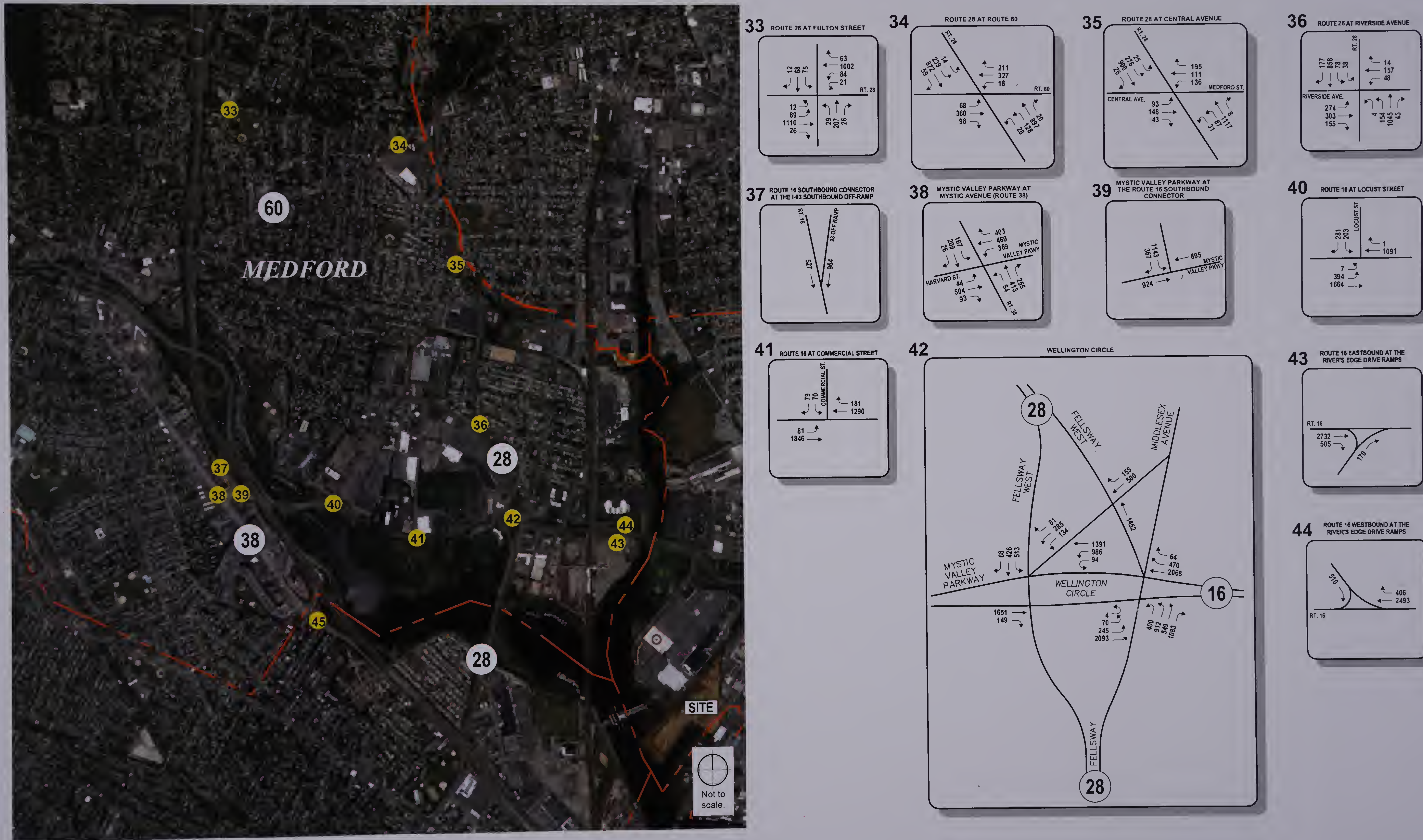


Figure 4-5

Existing (2013) Friday p.m. Peak Hour (4:30 – 5:30 p.m.) Traffic Volumes, Medford

Source: Howard/Stein-Hudson Associates, Inc., 2013

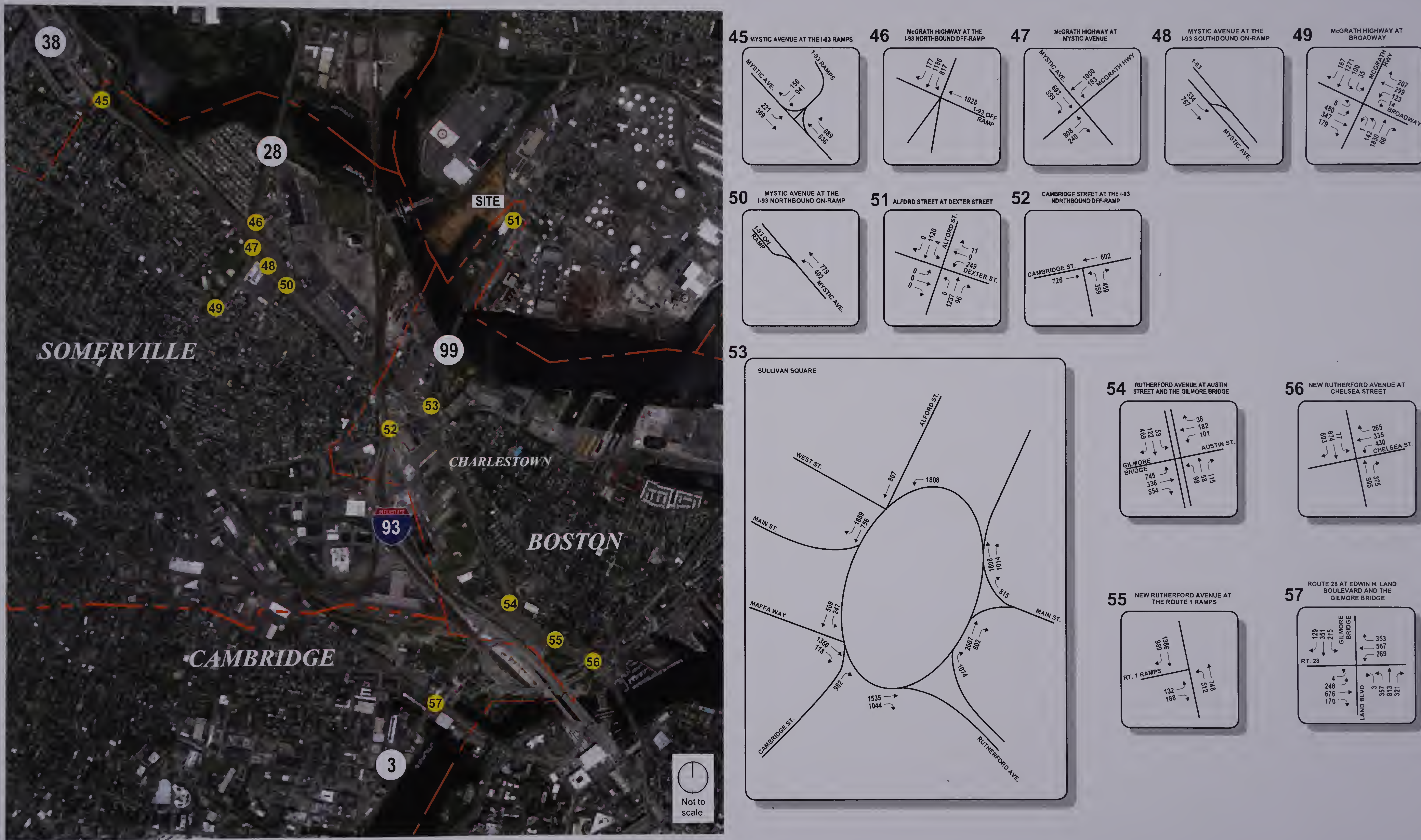


Figure 4-6
Existing (2013) Friday p.m. Peak Hour (4:30 – 5:30 p.m.) Traffic Volumes, Somerville, Boston, and Cambridge
Source: Howard/Stein-Hudson Associates, Inc., 2013

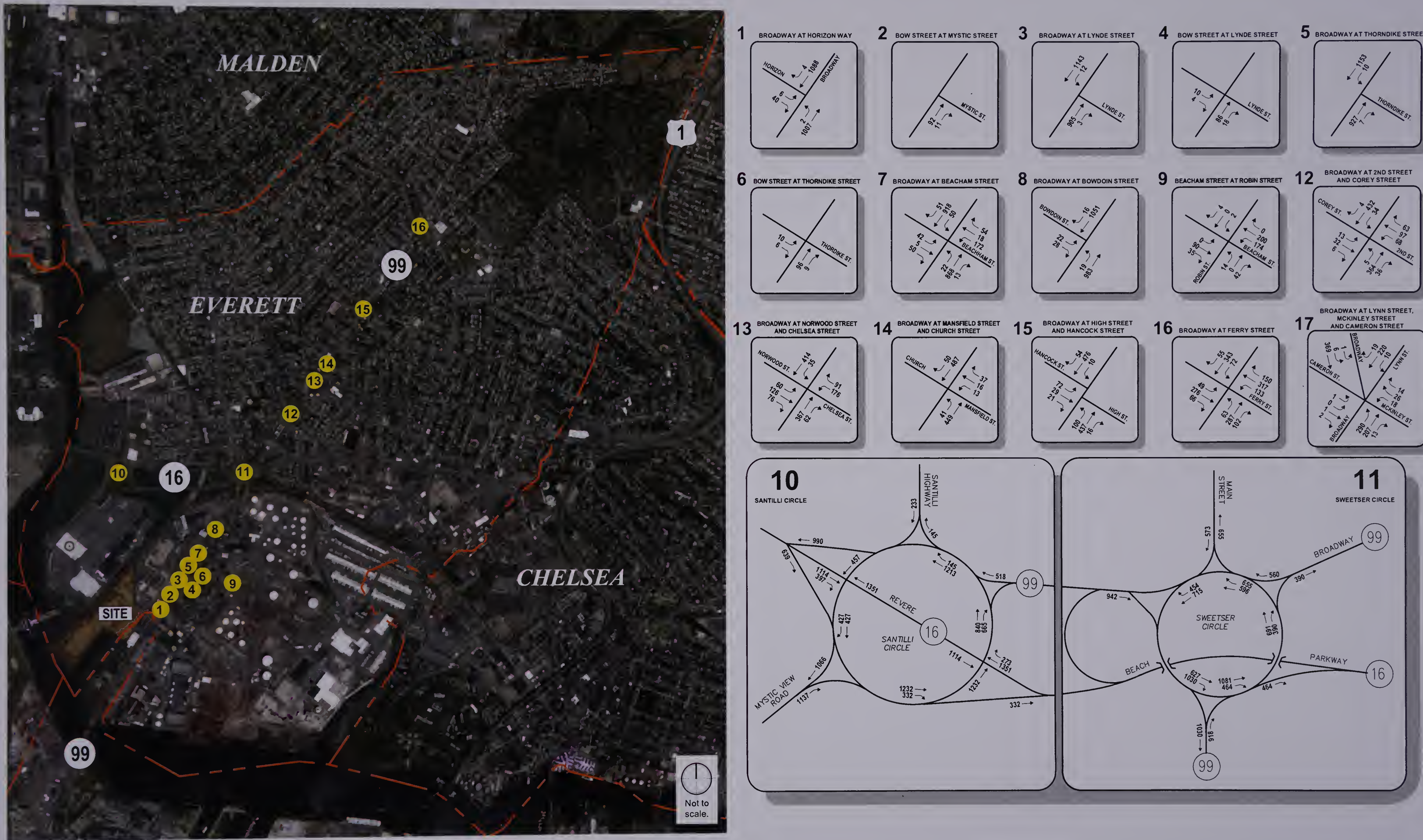


Figure 4-7A
Existing (2013) Saturday Afternoon Peak Hour (2:45 – 3:45 p.m.) Traffic Volumes, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-7B
Existing (2013) Saturday Afternoon Peak Hour (2:45 – 3:45 p.m.) Traffic Volumes, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-8
Existing (2013) Saturday Afternoon Peak Hour (2:45 – 3:45 p.m.) Traffic Volumes, Chelsea and Revere
Source: Howard/Stein-Hudson Associates, Inc., 2013

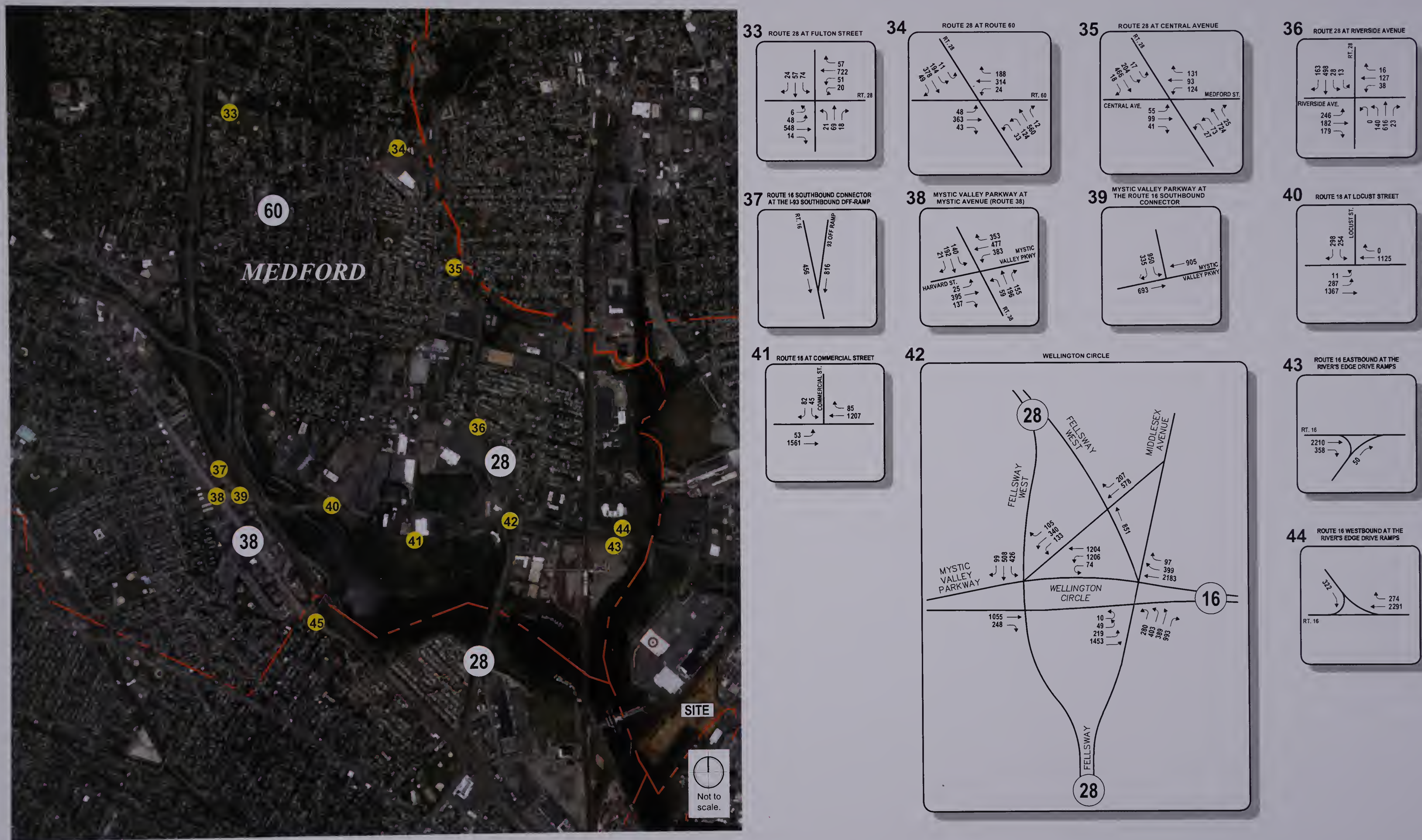


Figure 4-9
Existing (2013) Saturday Afternoon Peak Hour (2:45 – 3:45 p.m.) Traffic Volumes, Medford
Source: Howard/Stein-Hudson Associates, Inc., 2013

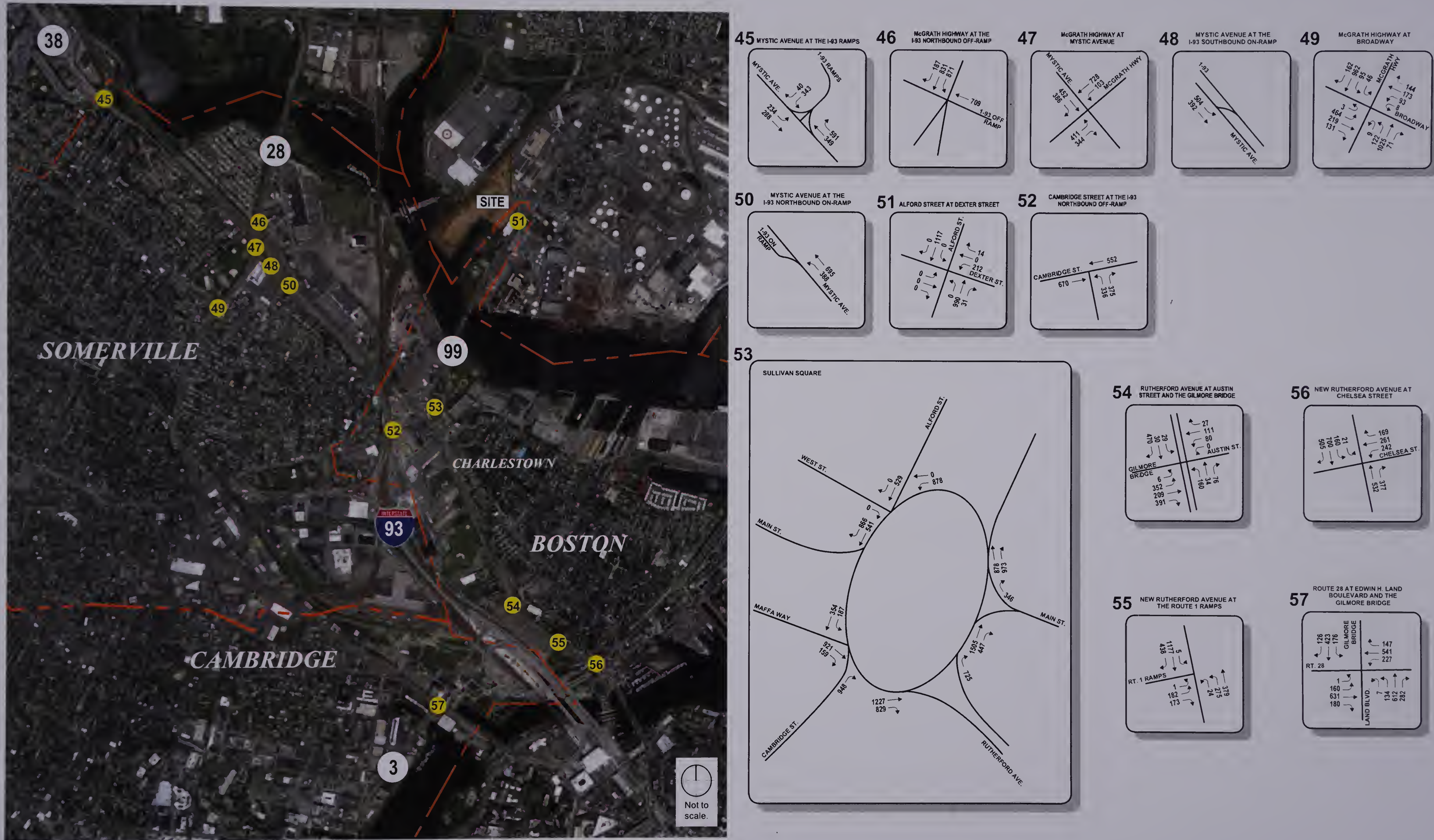


Figure 4-10
Existing (2013) Saturday Afternoon Peak Hour (2:45 – 3:45 p.m.) Traffic Volumes, Somerville, Boston, and Cambridge
Source: Howard/Stein-Hudson Associates, Inc., 2013

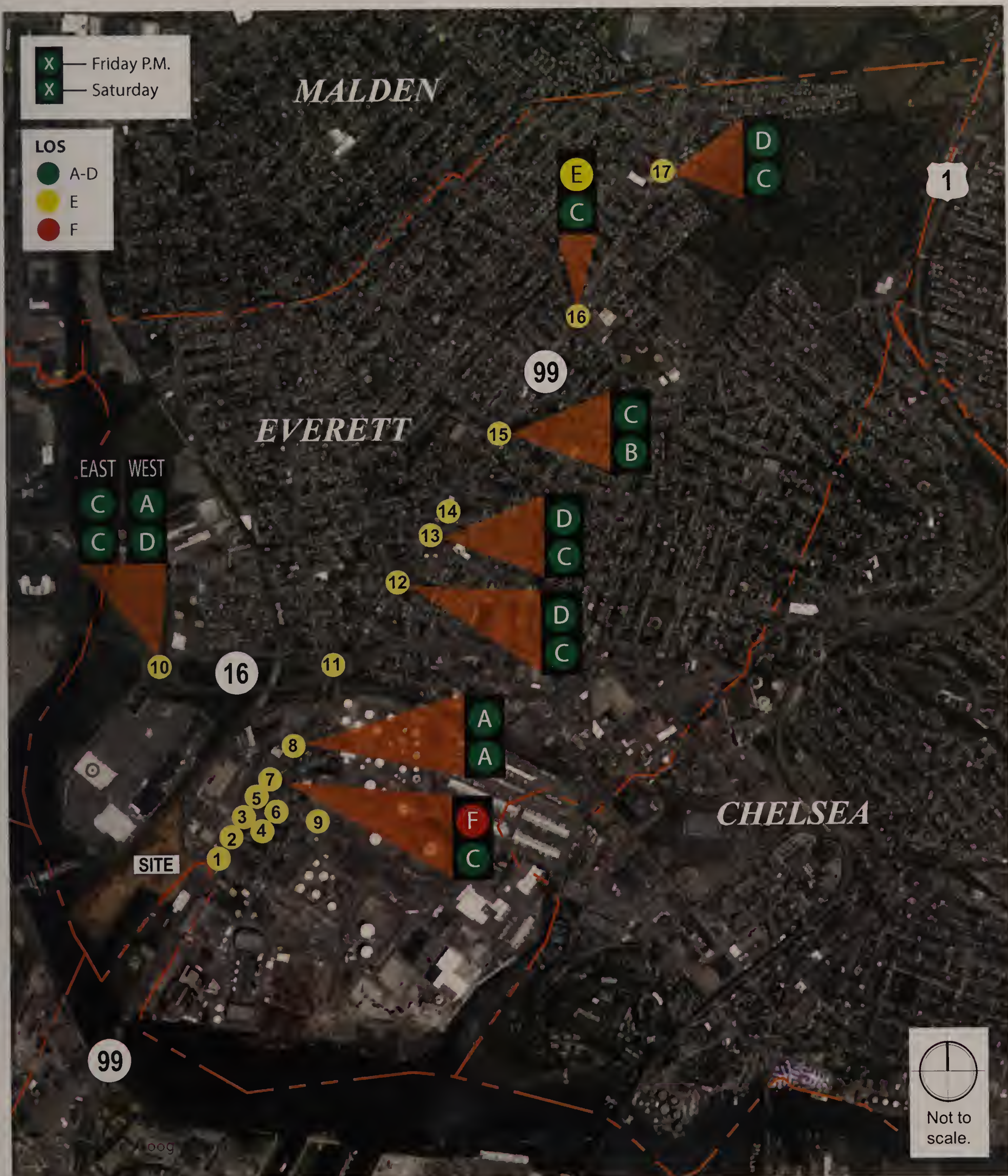


Figure 4-11A
Existing (2013) Peak Hour Capacity Analysis Summary, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

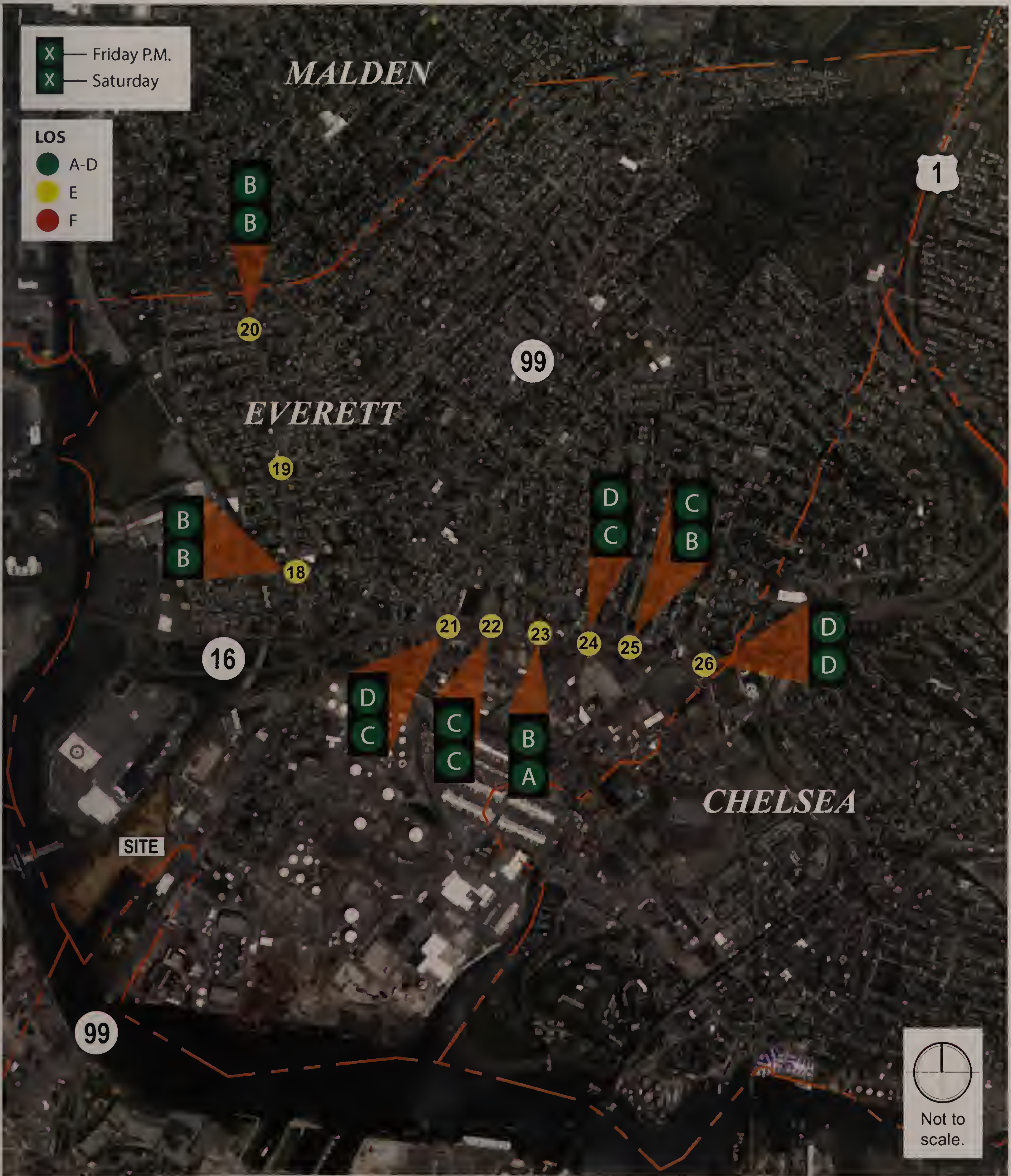


Figure 4-11B
Existing (2013) Peak Hour Capacity Analysis Summary, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

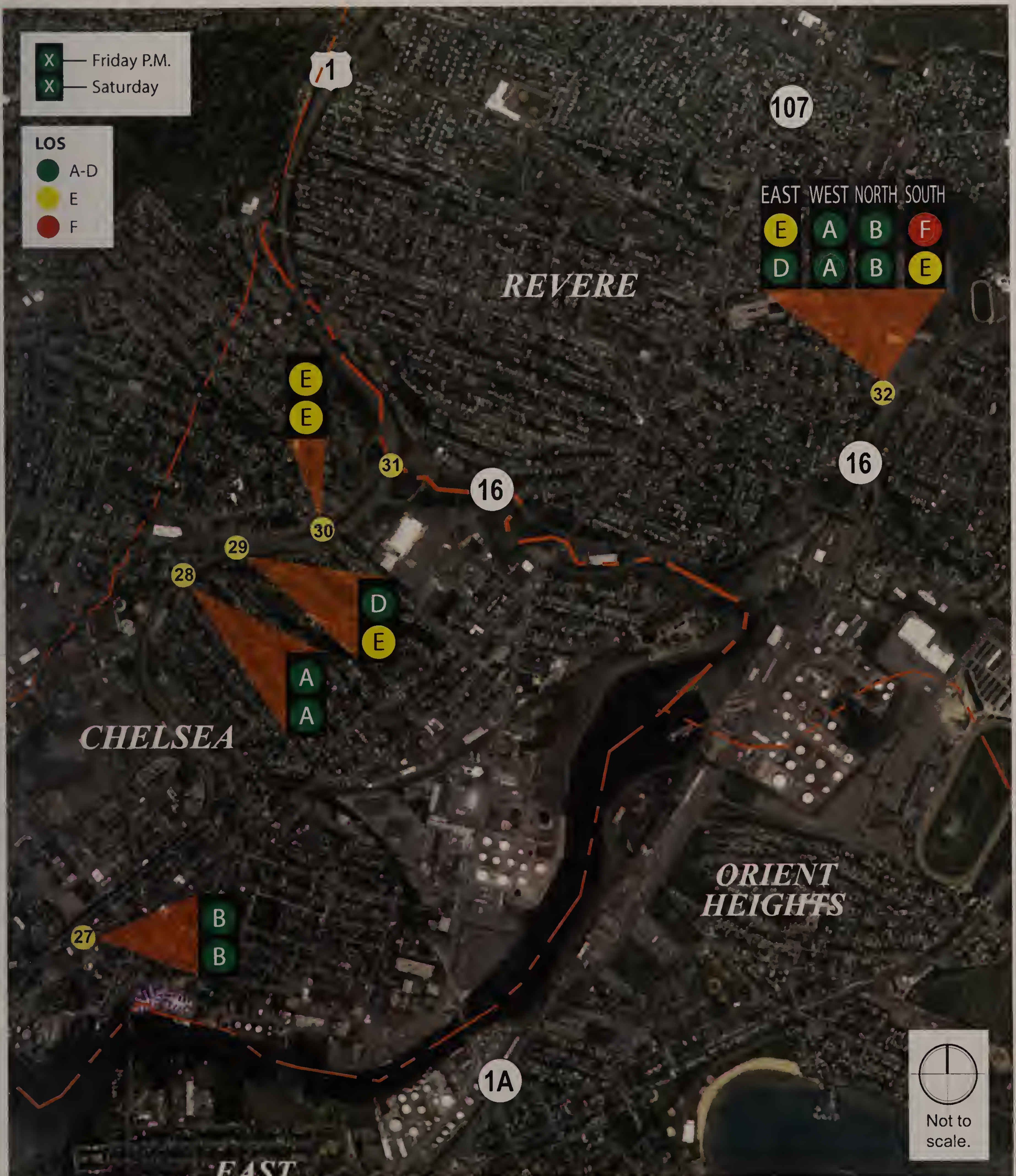


Figure 4-12
Existing (2013) Peak Hour Capacity Analysis Summary, Chelsea and Revere
Source: Howard/Stein-Hudson Associates, Inc., 2013

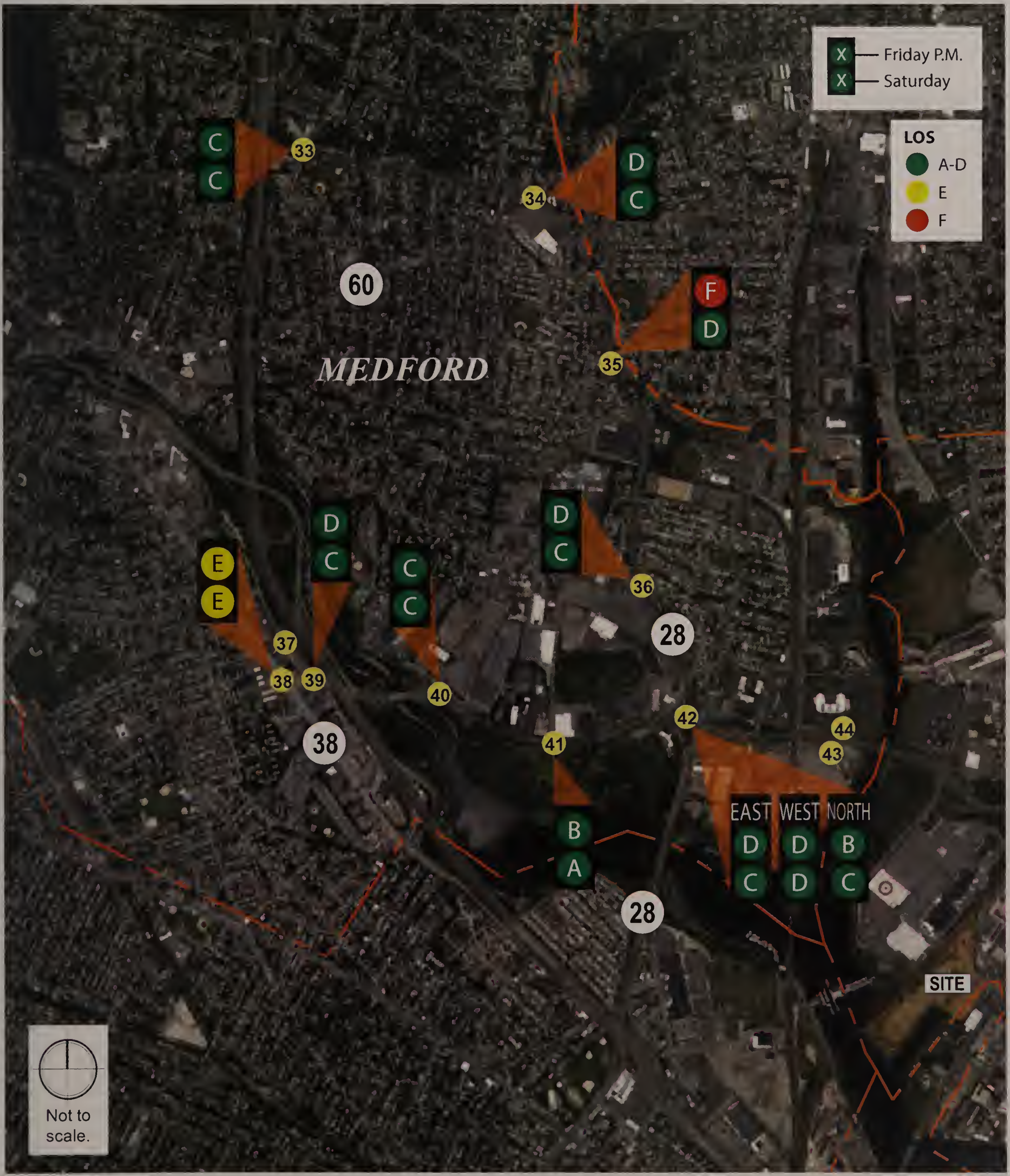
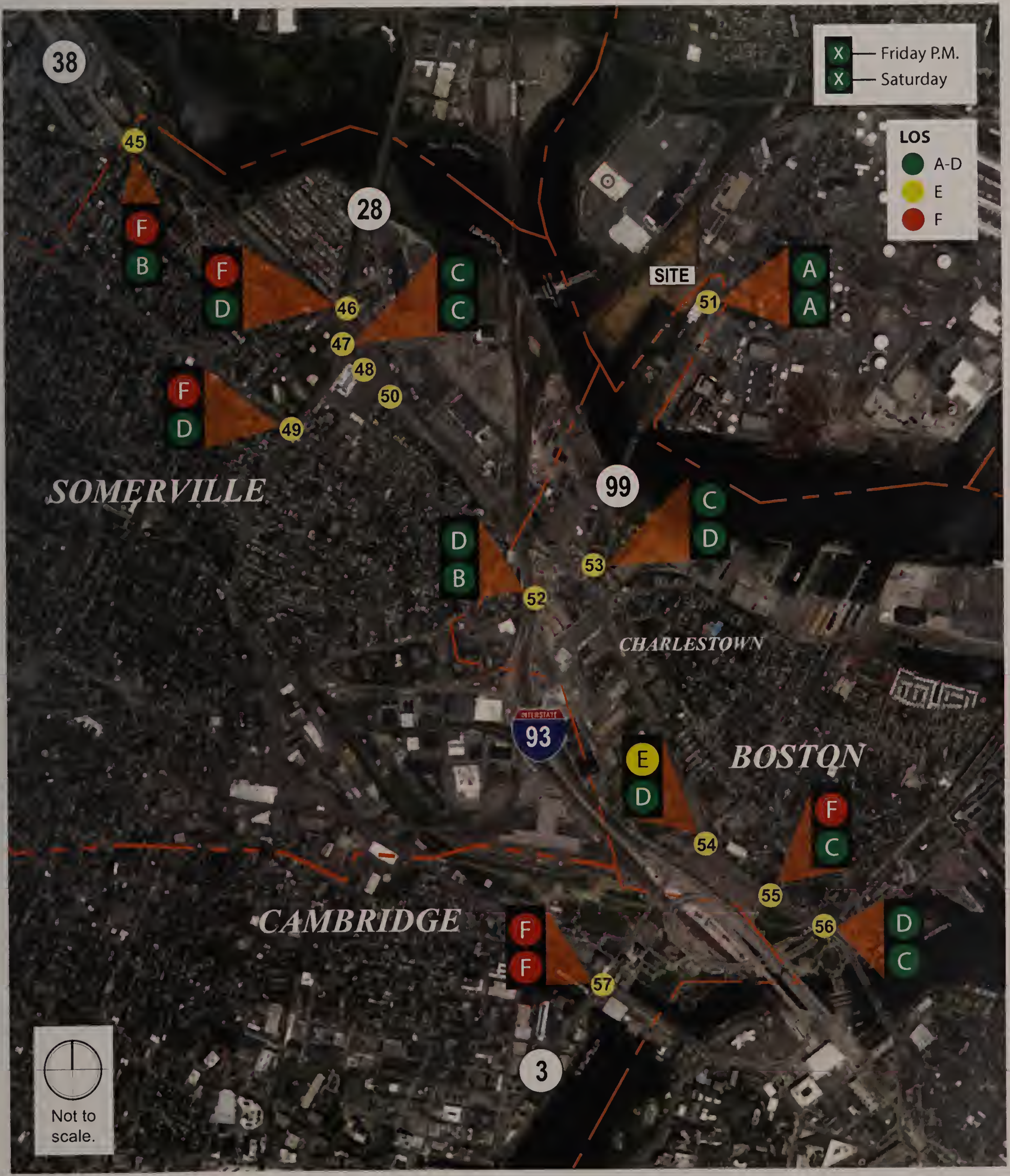


Figure 4-13
Existing (2013) Peak Hour Capacity Analysis Summary, Medford
Source: Howard/Stein-Hudson Associates, Inc., 2013



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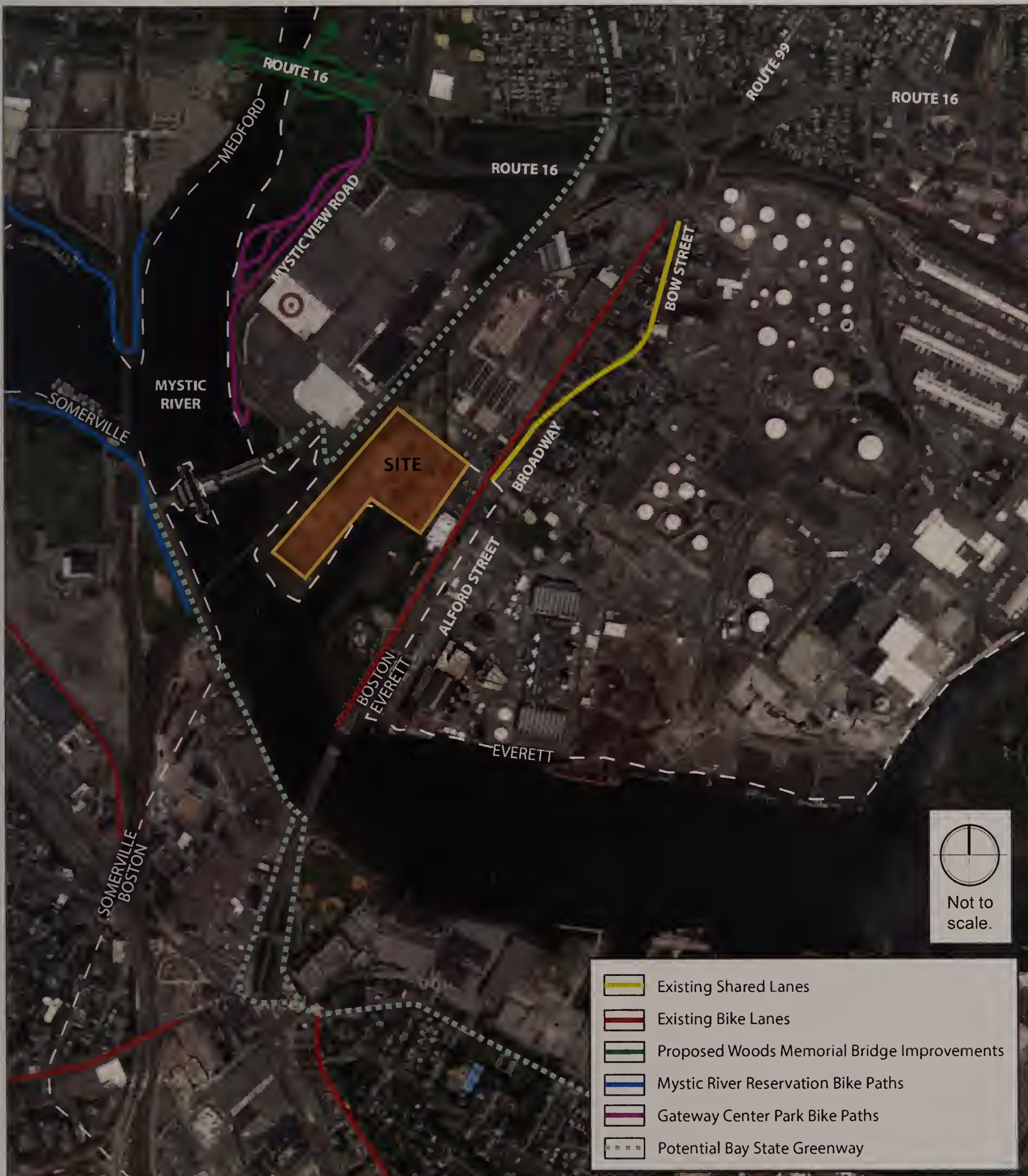
Everett, Massachusetts

Figure 4-14
Existing (2013) Peak Hour Capacity Analysis Summary, Somerville, Boston and Cambridge
Source: Howard/Stein-Hudson Associates, Inc., 2013



Wynn Everett
Everett, Massachusetts

Figure 4-15
Existing and Planned Pedestrian and Bicycle Facilities in the Study Area
Source: Howard/Stein-Hudson Associates, Inc., 2013

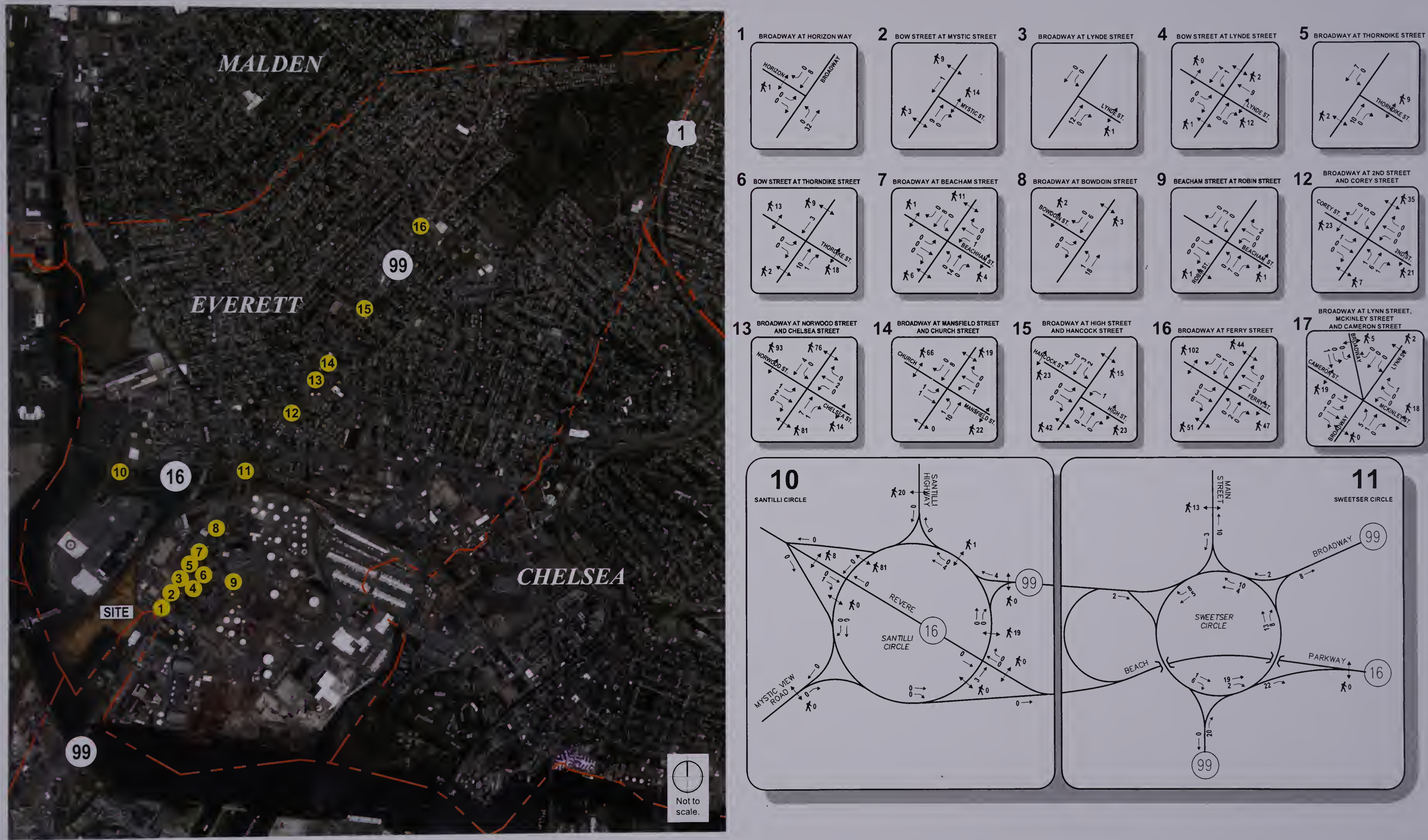


Figure 4-16A
Existing (2013) Pedestrian and Bicycle Counts, Friday p.m. Peak Hour (4:30-5:30 p.m.), Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-16B
Existing (2013) Pedestrian and Bicycle Counts, Friday p.m. Peak Hour (4:30-5:30 p.m.), Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-17
Existing (2013) Pedestrian and Bicycle Counts, Friday p.m. Peak Hour (4:30-5:30 p.m.), Chelsea and Revere
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-18
Existing (2013) Pedestrian and Bicycle Counts, Friday p.m. Peak Hour (4:30-5:30 p.m.), Medford
Source: Howard/Stein-Hudson Associates, Inc., 2013

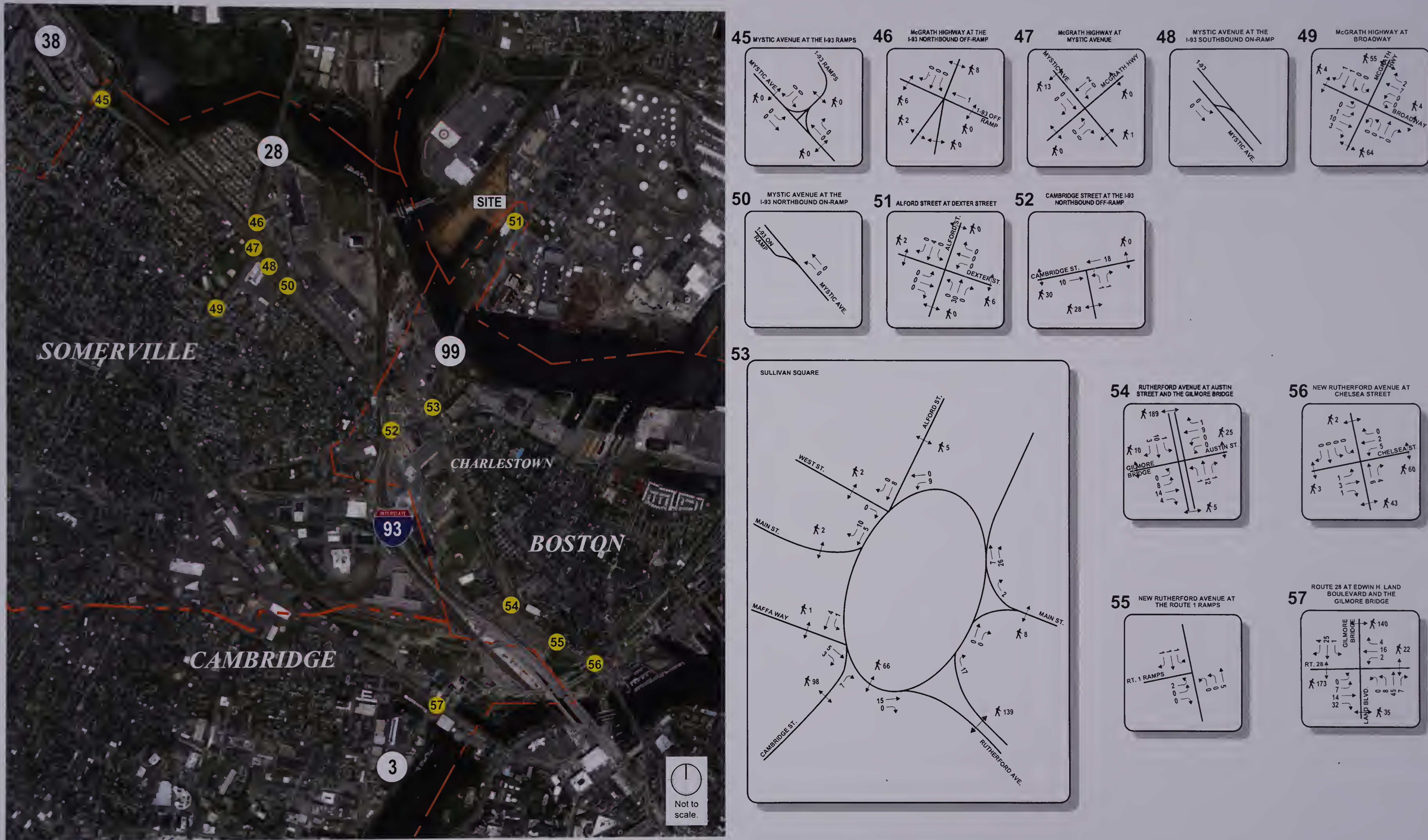


Figure 4-19
Existing (2013) Pedestrian and Bicycle Counts, Friday p.m. Peak Hour (4:30-5:30 p.m.), Somerville, Boston, and Cambridge
Source: Howard/Stein-Hudson Associates, Inc., 2013

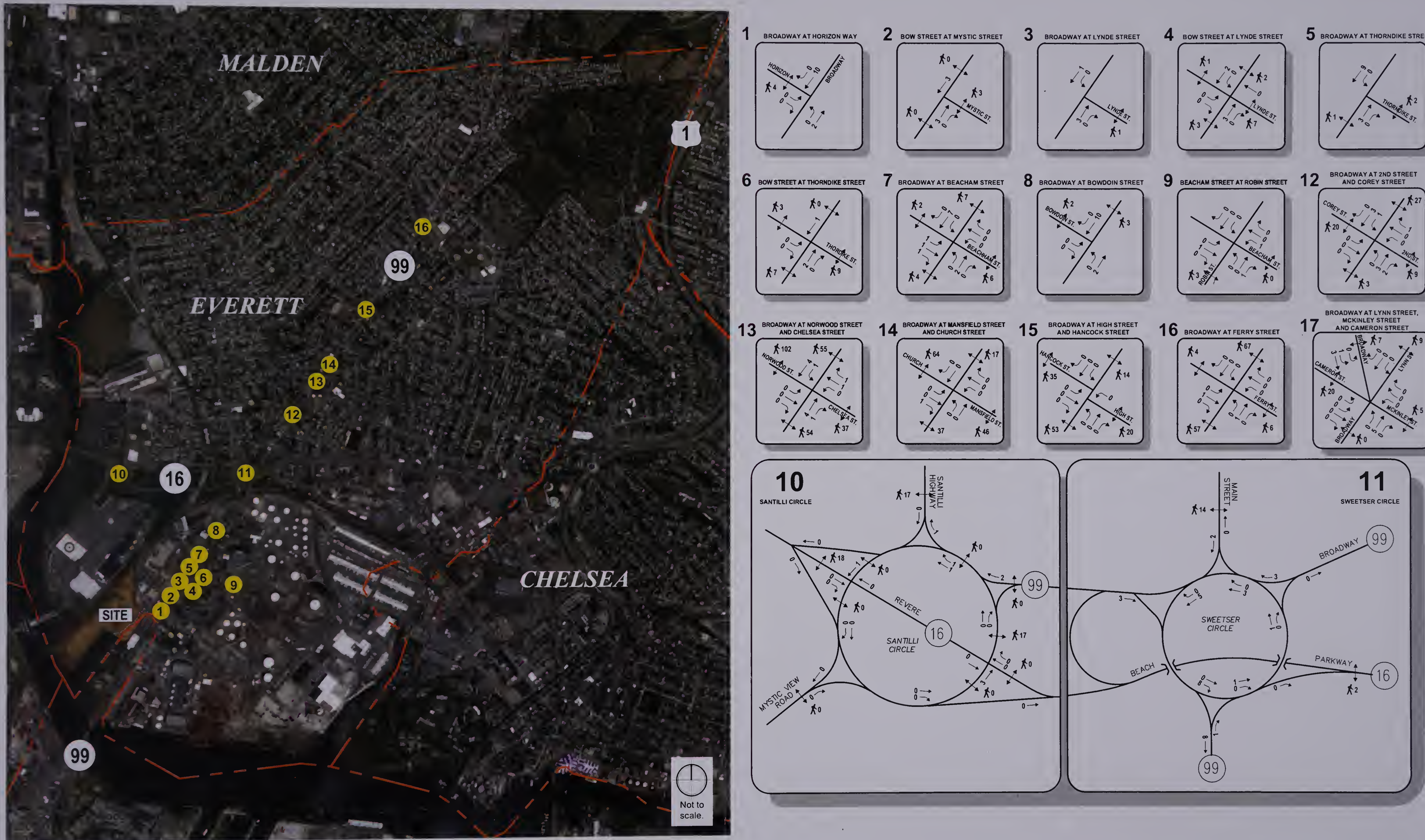


Figure 4-20A
Existing (2013) Pedestrian and Bicycle Counts, Saturday Afternoon Peak Hour (2:45-3:45 p.m.), Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

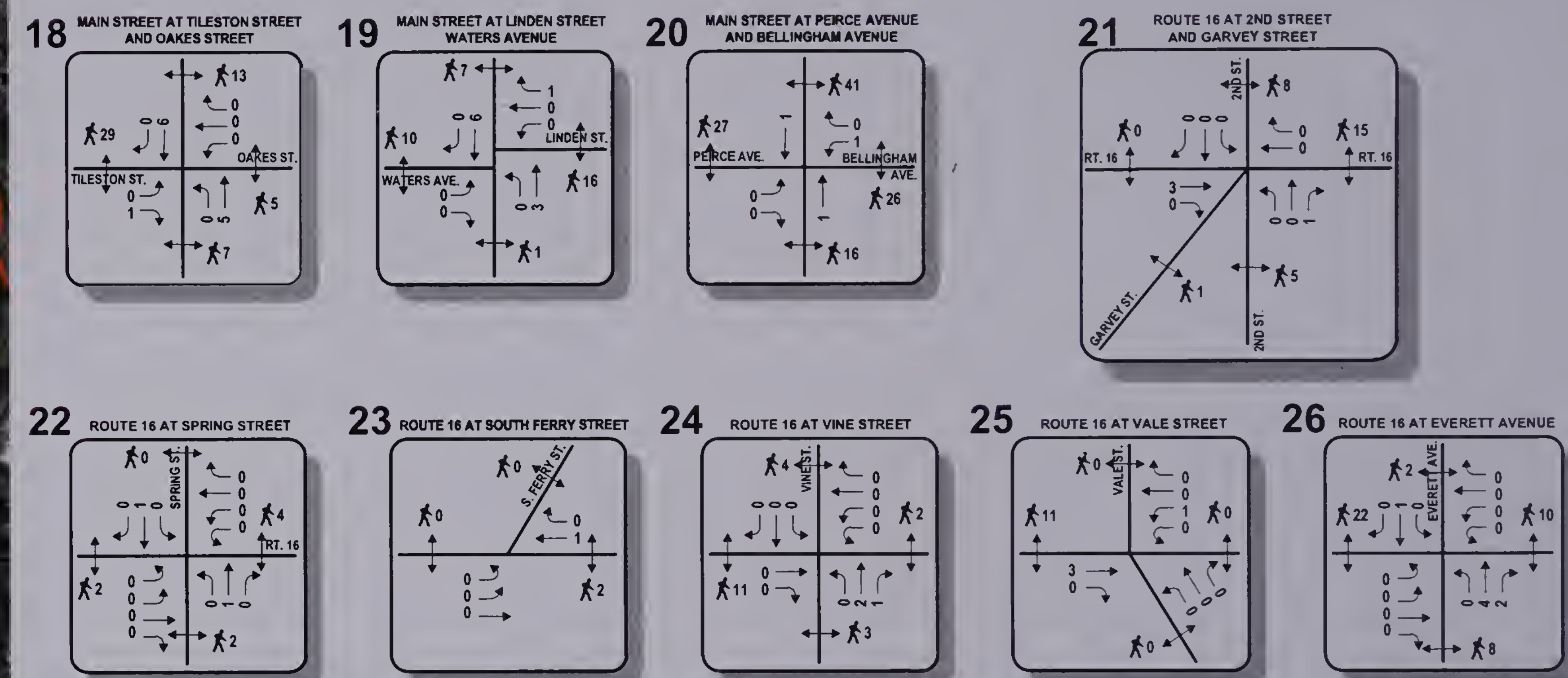


Figure 4-20B
Existing (2013) Pedestrian and Bicycle Counts, Saturday Afternoon Peak Hour (2:45-3:45 p.m.), Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-21
Existing (2013) Pedestrian and Bicycle Counts, Saturday Afternoon Peak Hour (2:45-3:45 p.m.), Chelsea and Revere
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-22

Existing (2013) Pedestrian and Bicycle Counts, Saturday Afternoon Peak Hour (2:45-3:45 p.m.), Medford

Source: Howard/Stein-Hudson Associates, Inc., 2013

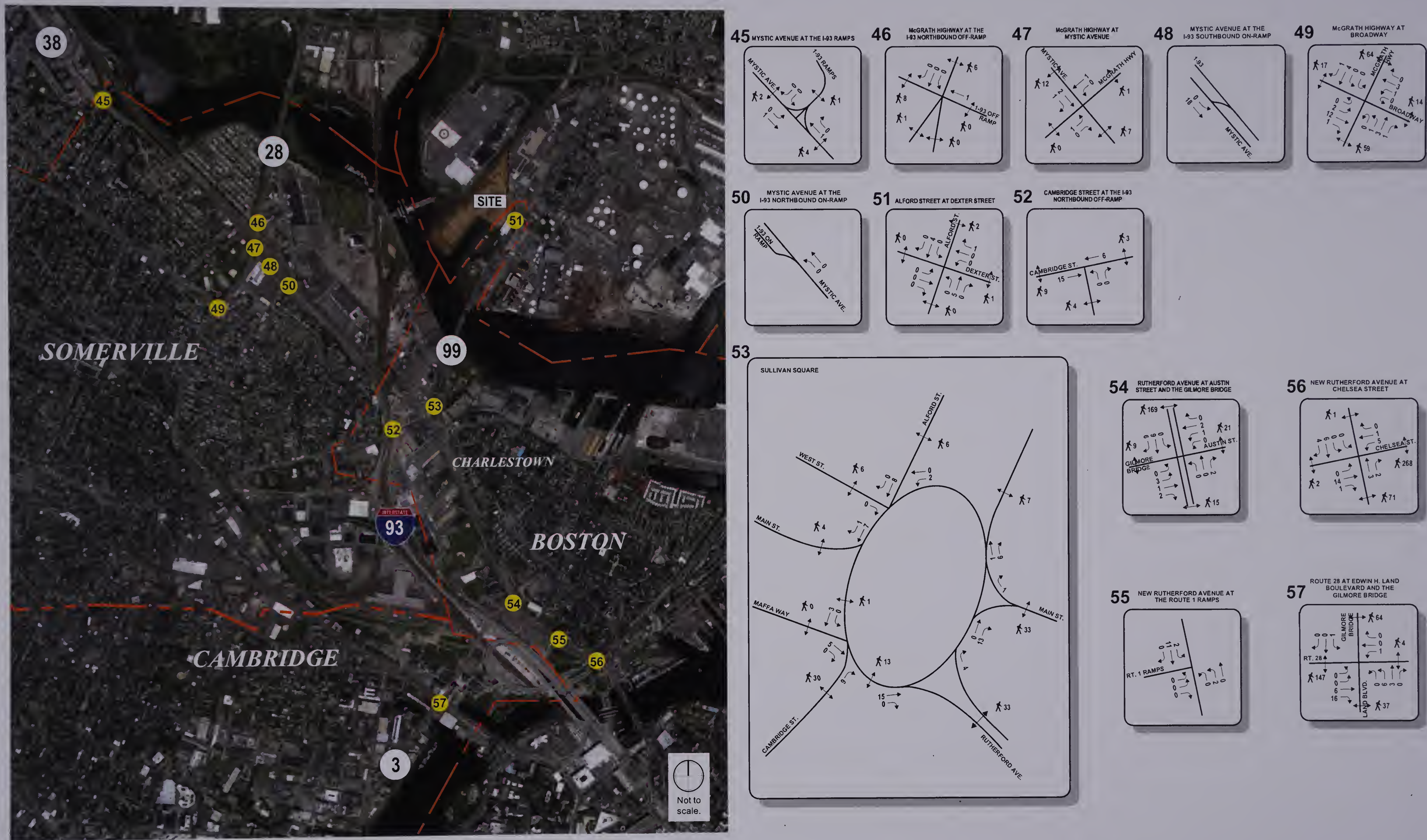


Figure 4-23
Existing (2013) Pedestrian and Bicycle Counts, Saturday Afternoon Peak Hour (2:45-3:45 p.m.), Somerville, Boston, and Cambridge
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-24
Public Transportation Services in The Study Area
Source: MBTA, 2013

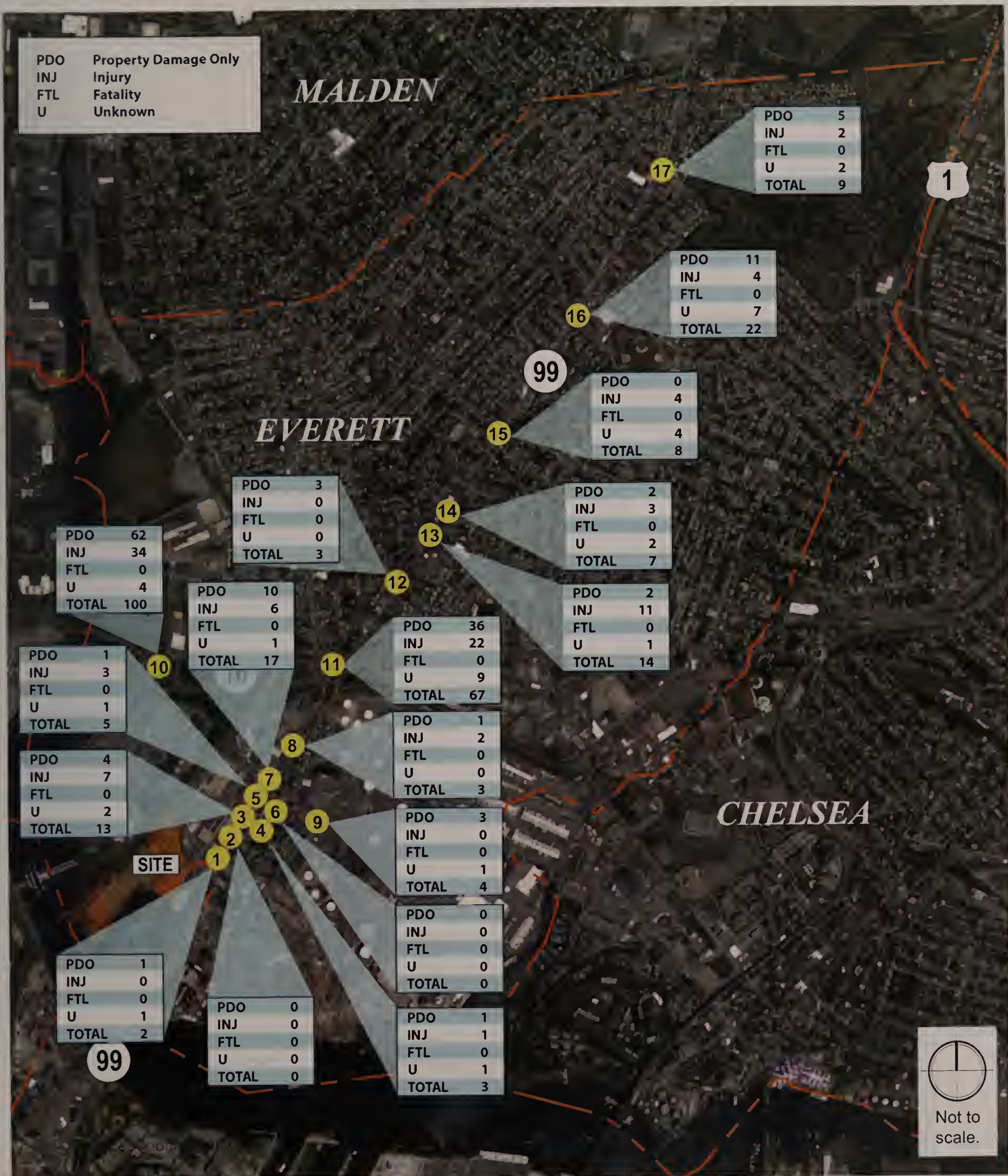


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Figure 4-25A
Crash Summary, 2008-2010, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-25B
Crash Summary, 2008-2010, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-26
Crash Summary, 2008-2010, Chelsea and Revere
Source: Howard/Stein-Hudson Associates, Inc., 2013

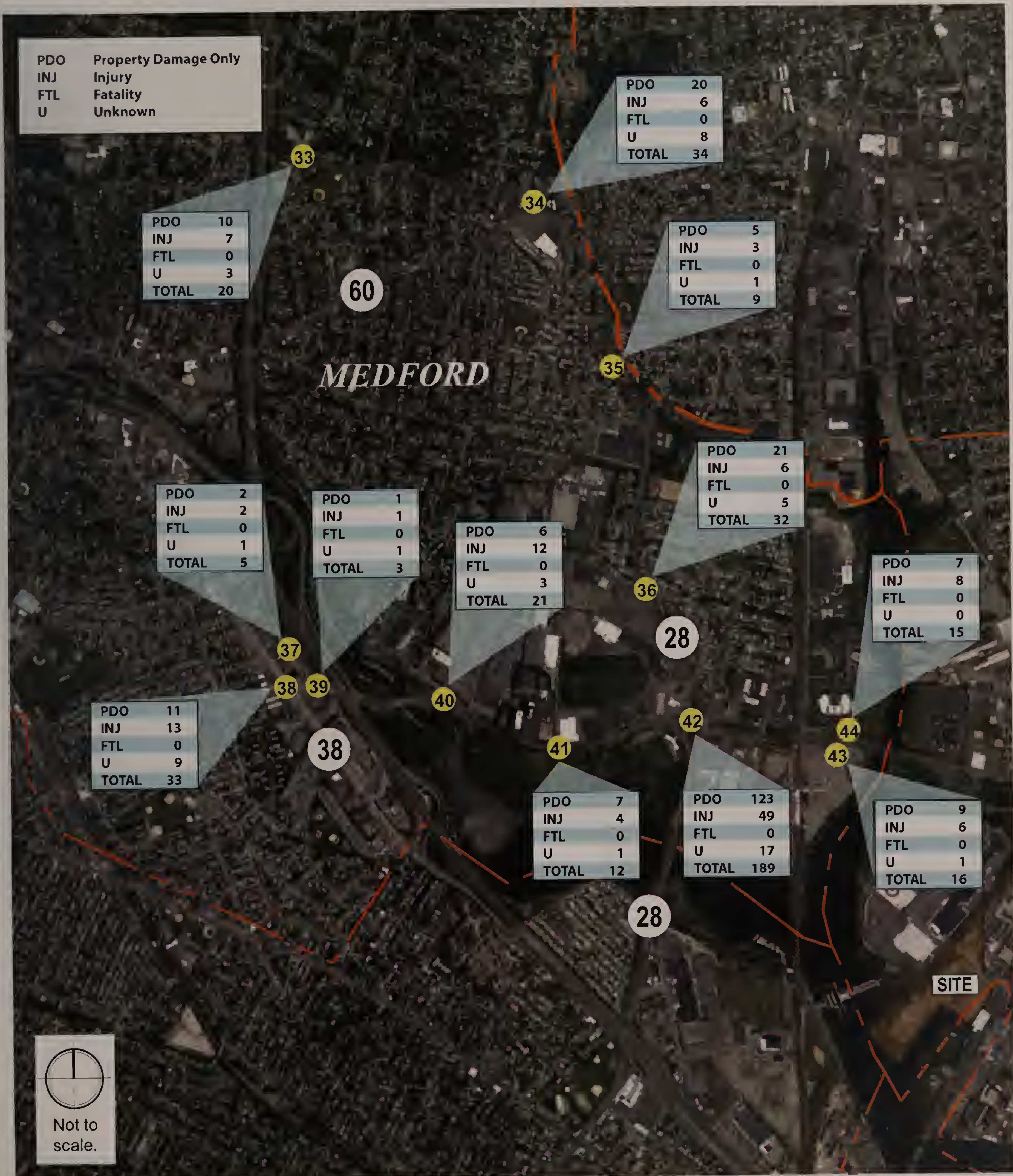

Figure 4-27
Crash Summary, 2008-2010, Medford
Source: Howard/Stein-Hudson Associates, Inc., 2013

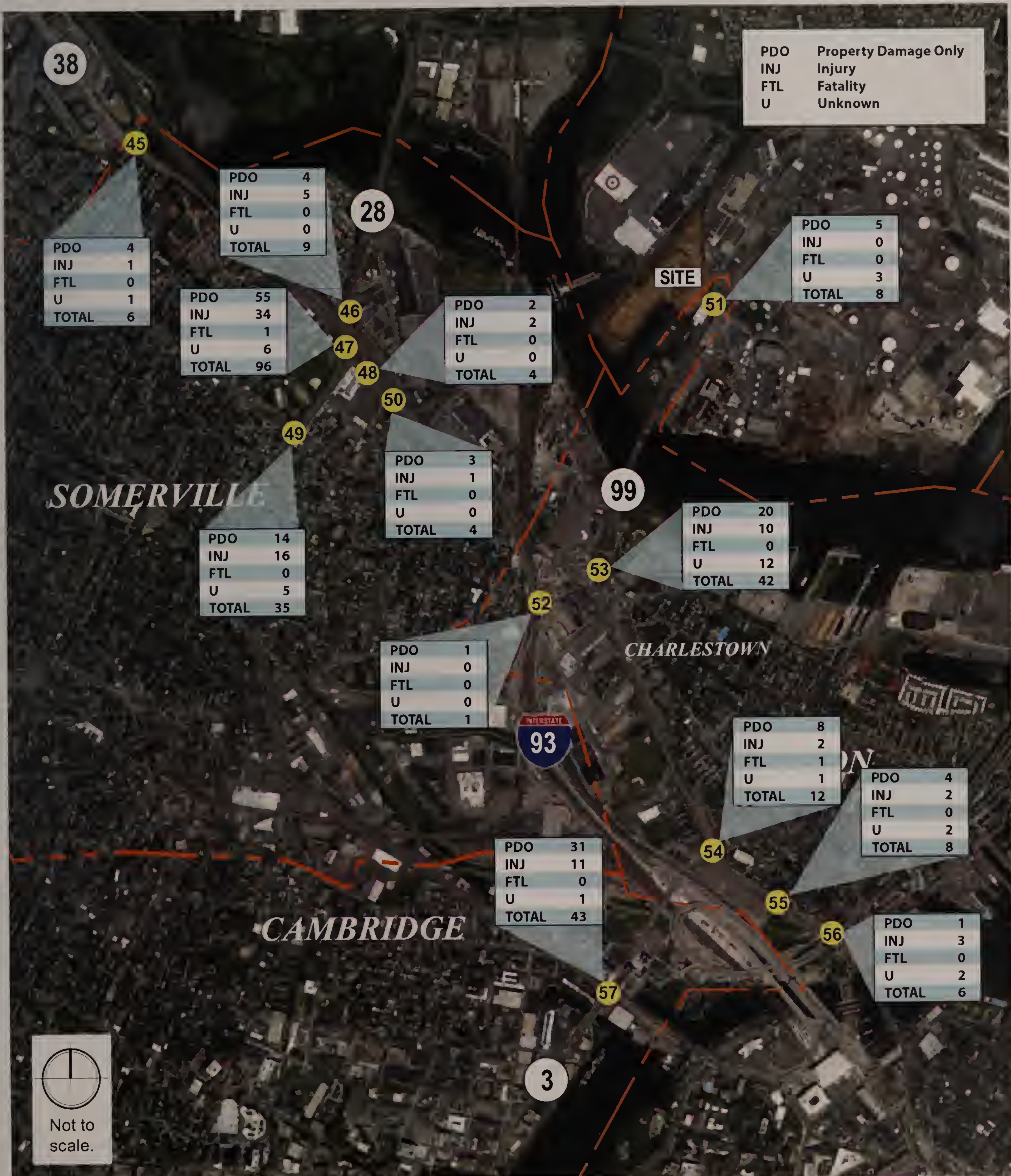

Figure 4-28
Crash Summary, 2008-2010, Somerville, Boston, and Cambridge
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-29
Other Development Projects in the Study Area
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-30
Sullivan Square Conceptual Improvements
Source: City of Boston, 2013

Figure 4-31A
No-Build (2023) Friday p.m. Peak Hour Traffic Volumes, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

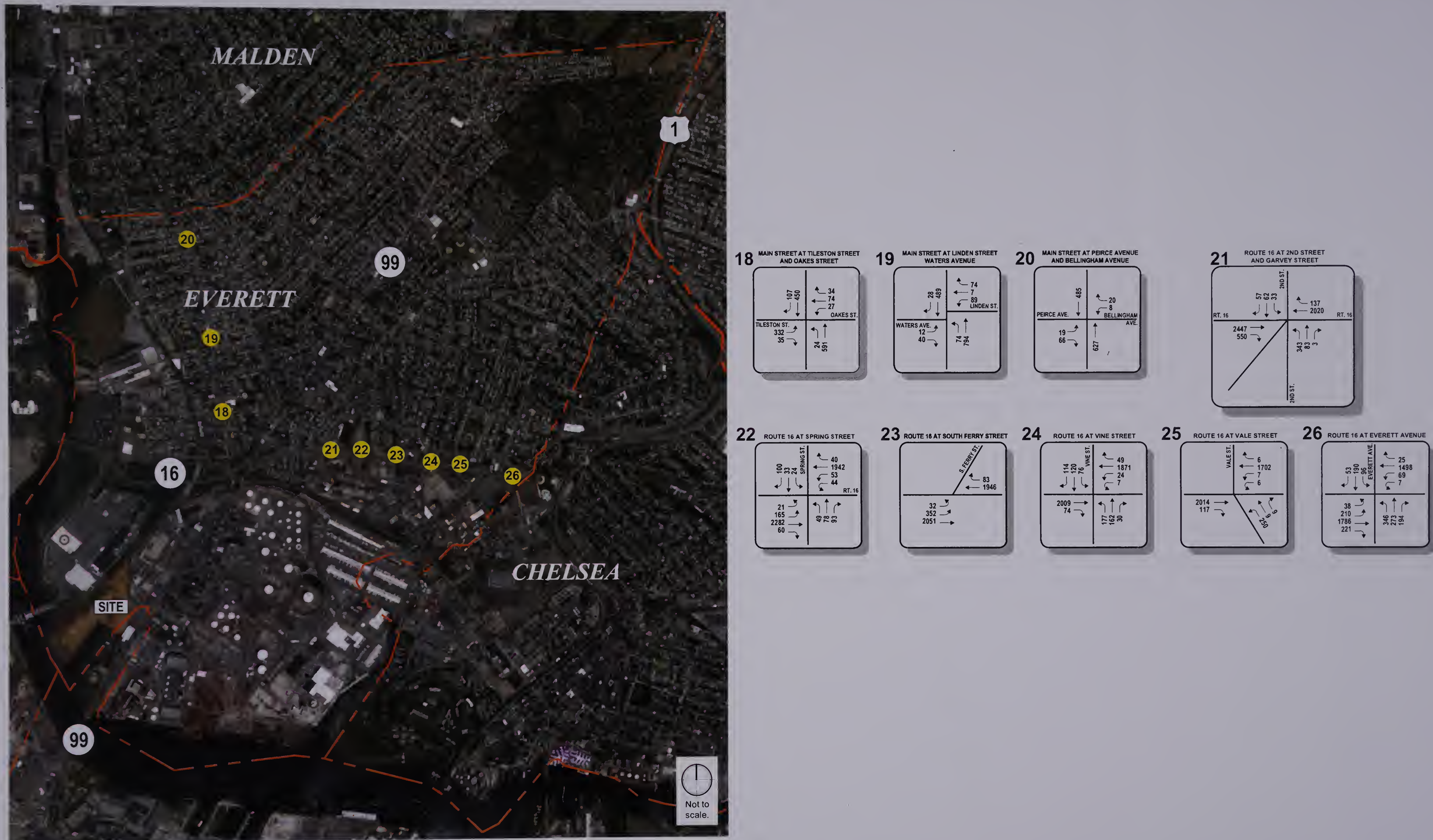

Figure 4-31B
No-Build (2023) Friday p.m. Peak Hour Traffic Volumes, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-32
No-Build (2023) Friday p.m. Peak Hour Traffic Volumes, Chelsea and Revere
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-33
No-Build (2023) Friday p.m. Peak Hour Traffic Volumes, Medford
Source: Howard/Stein-Hudson Associates, Inc., 2013

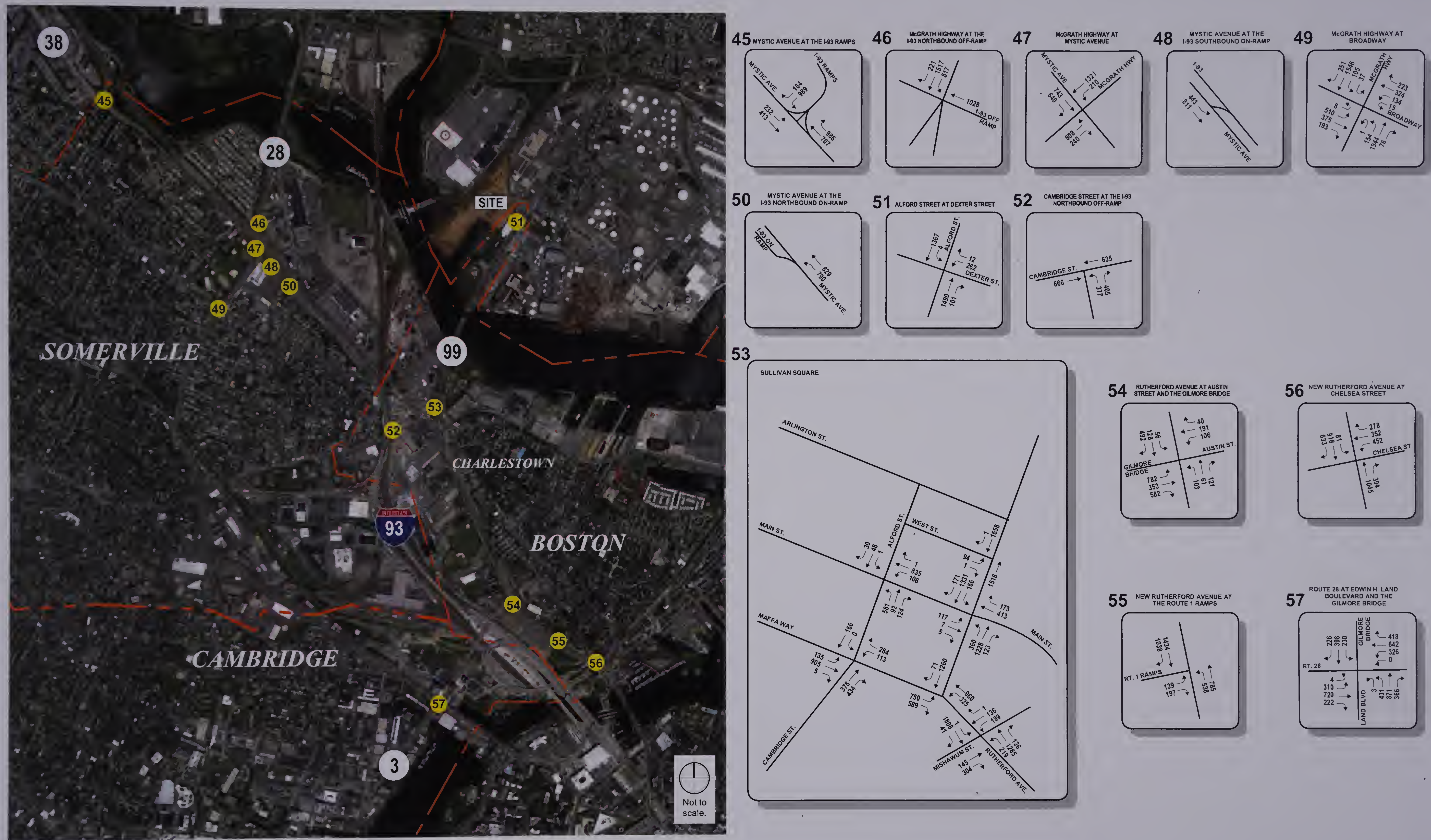

Figure 4-34
No-Build (2023) Friday p.m. Peak Hour Traffic Volumes, Somerville, Boston, and Cambridge
Source: Howard/Stein-Hudson Associates, Inc., 2013

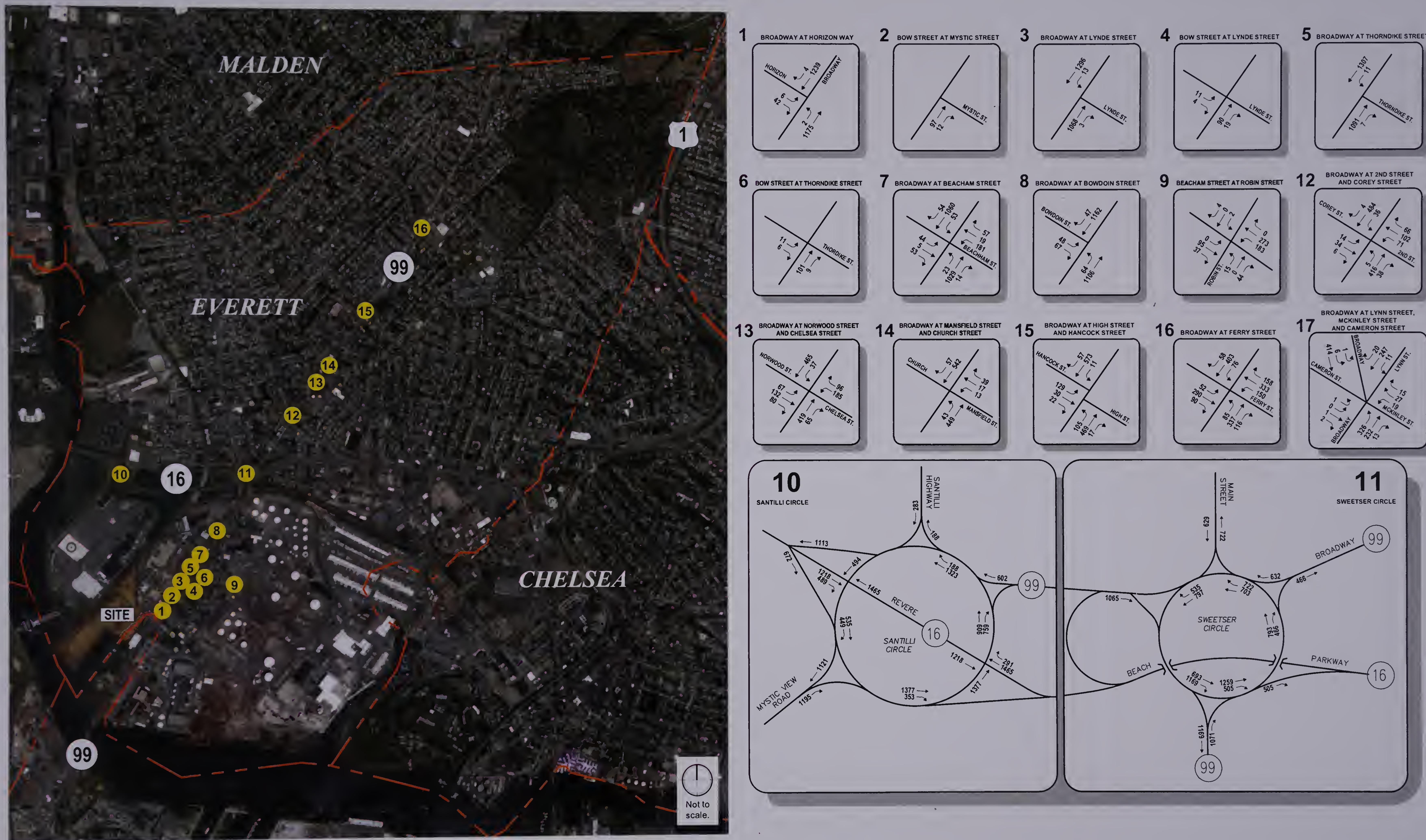

Figure 4-35A
No-Build (2023) Saturday Afternoon Peak Hour Traffic Volumes, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

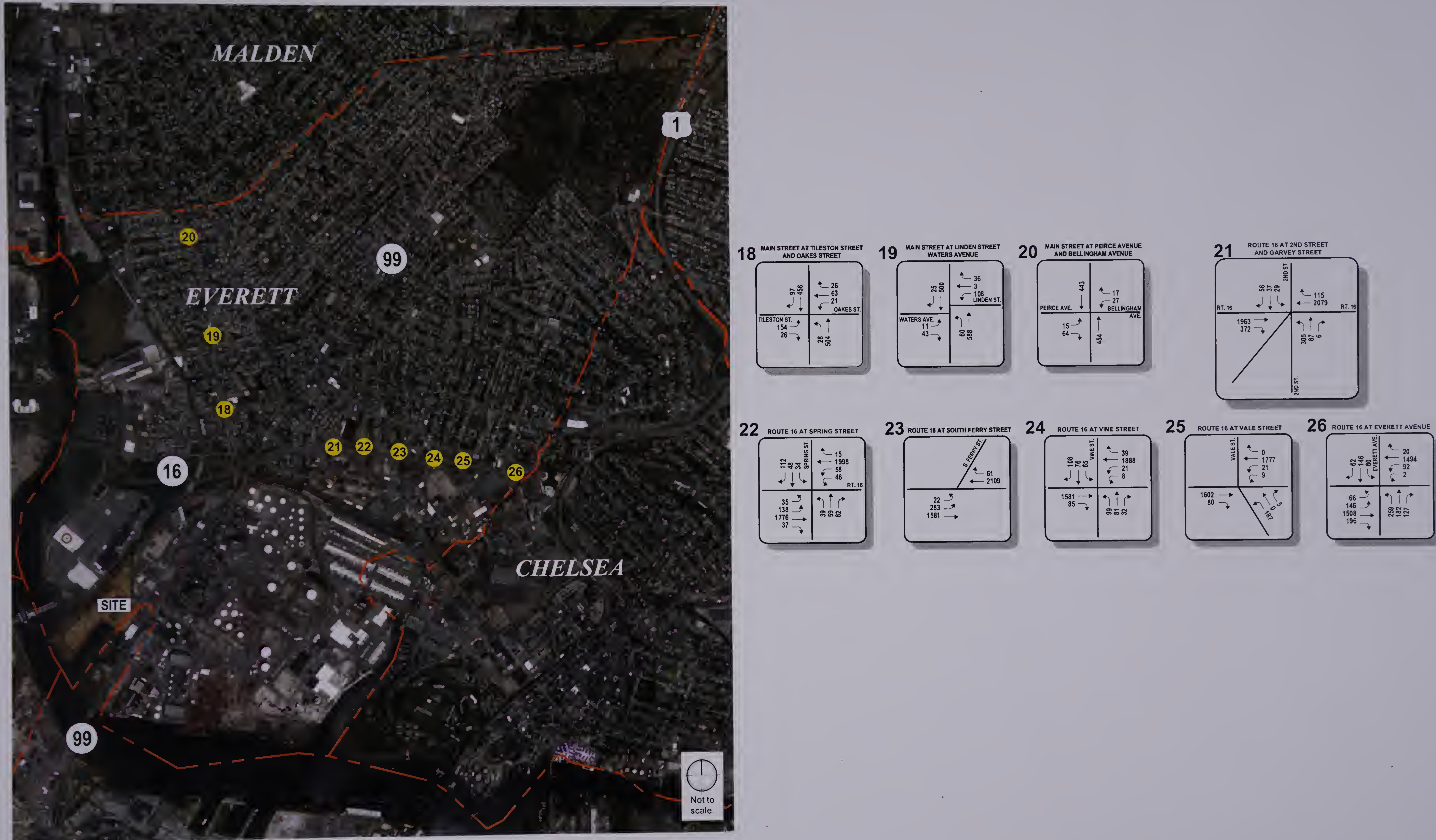

Figure 4-35B
No-Build (2023) Saturday Afternoon Peak Hour Traffic Volumes, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

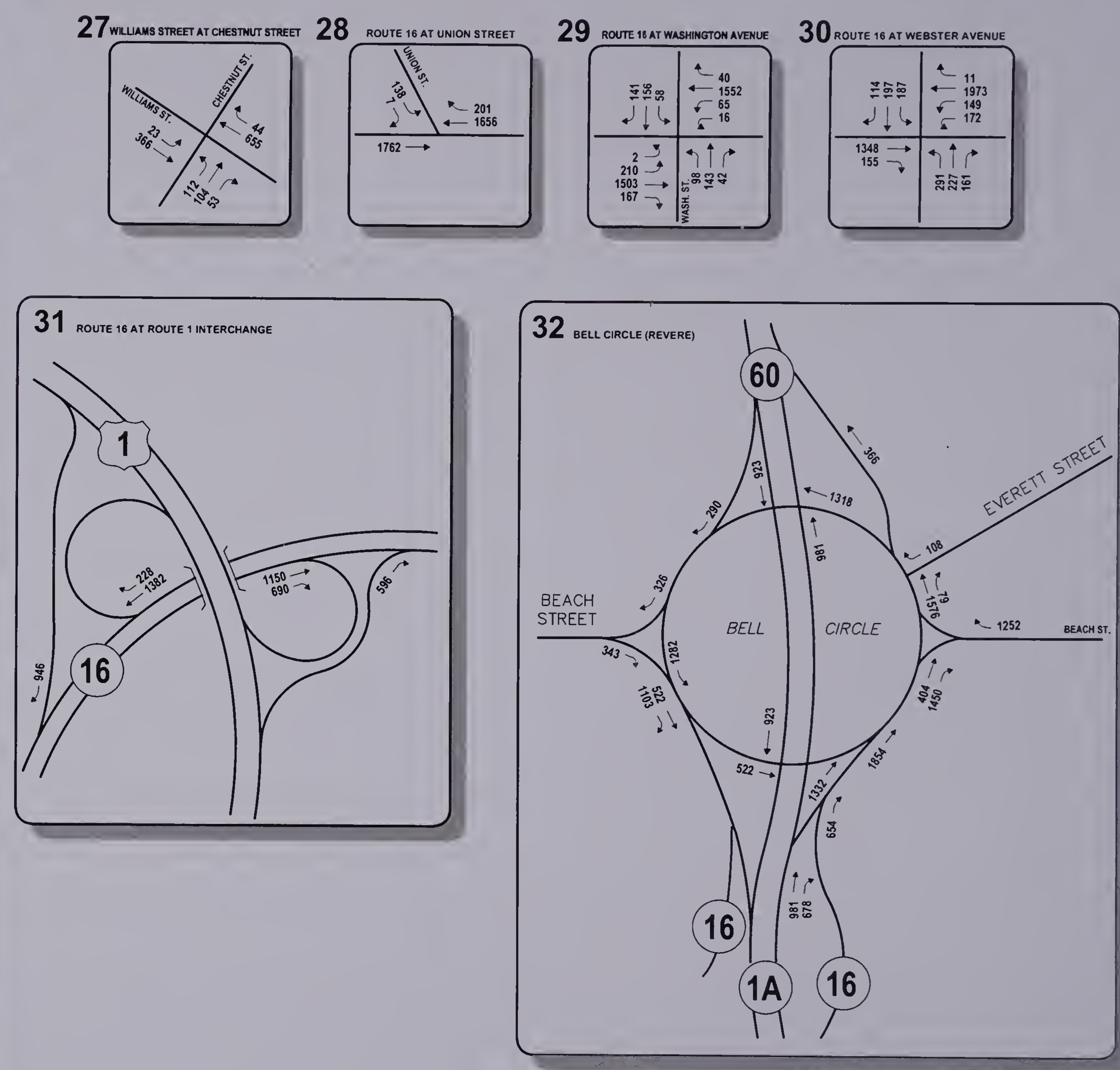

Figure 4-36
No-Build (2023) Saturday Afternoon Peak Hour Traffic Volumes, Chelsea and Revere
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-38
No-Build (2023) Saturday Afternoon Peak Hour Traffic Volumes, Somerville, Boston, and Cambridge
Source: Howard/Stein-Hudson Associates, Inc., 2013

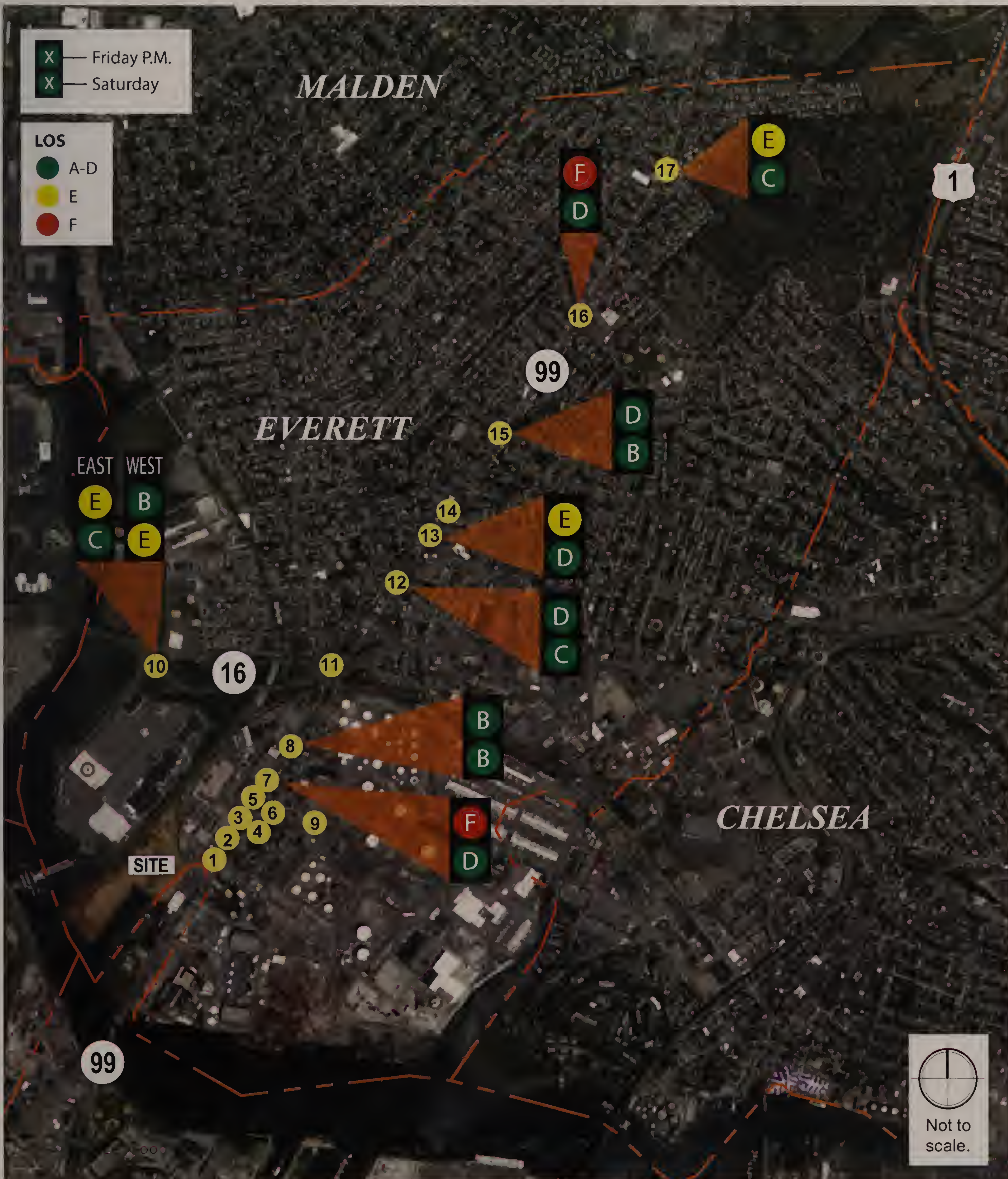

Figure 4-39A
No-Build (2023) Peak Hour Capacity Analysis Summary, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

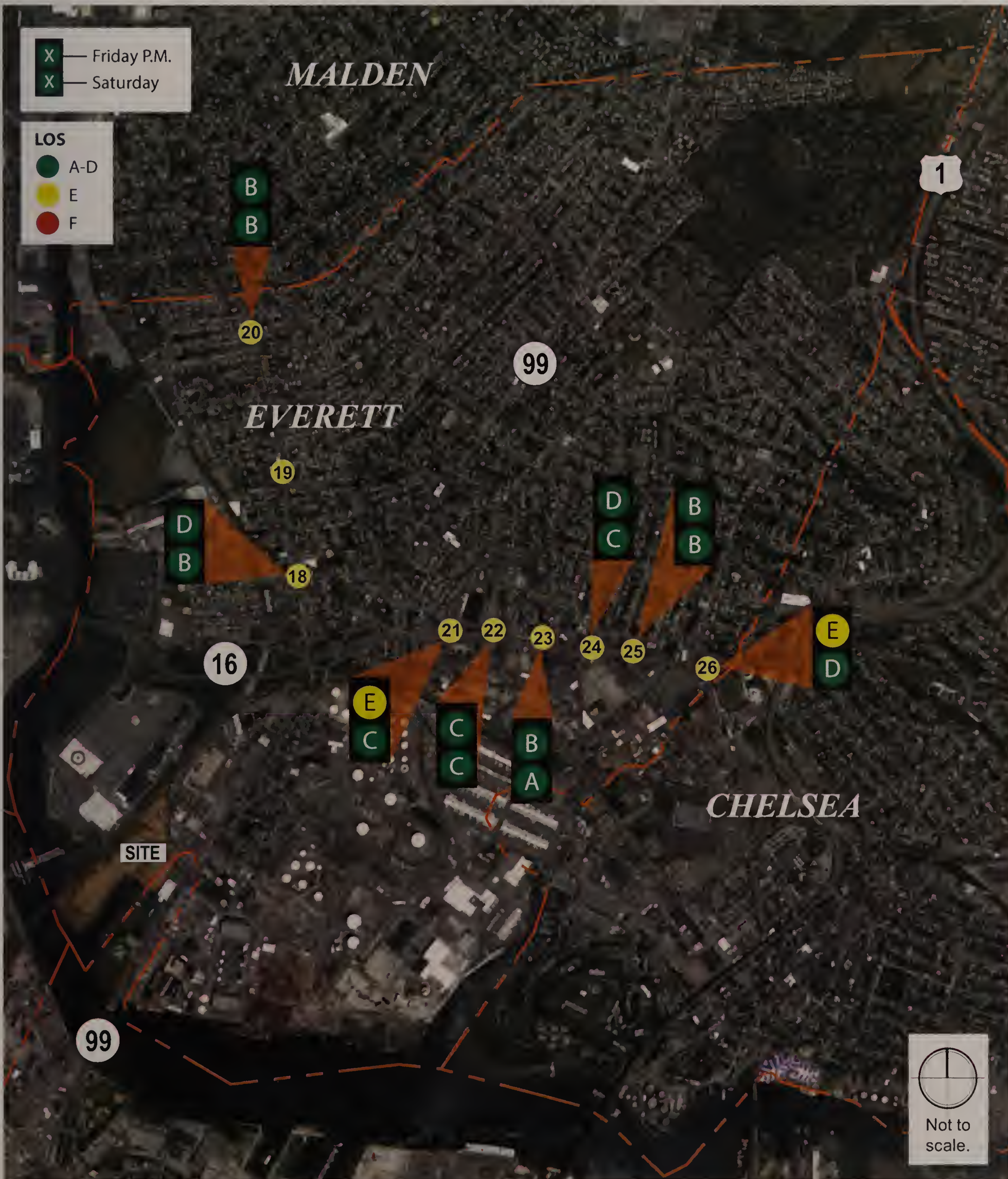

Figure 4-39B
No-Build (2023) Peak Hour Capacity Analysis Summary, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-40
No-Build (2023) Peak Hour Capacity Analysis Summary, Chelsea and Revere
Source: Howard/Stein-Hudson Associates, Inc., 2013

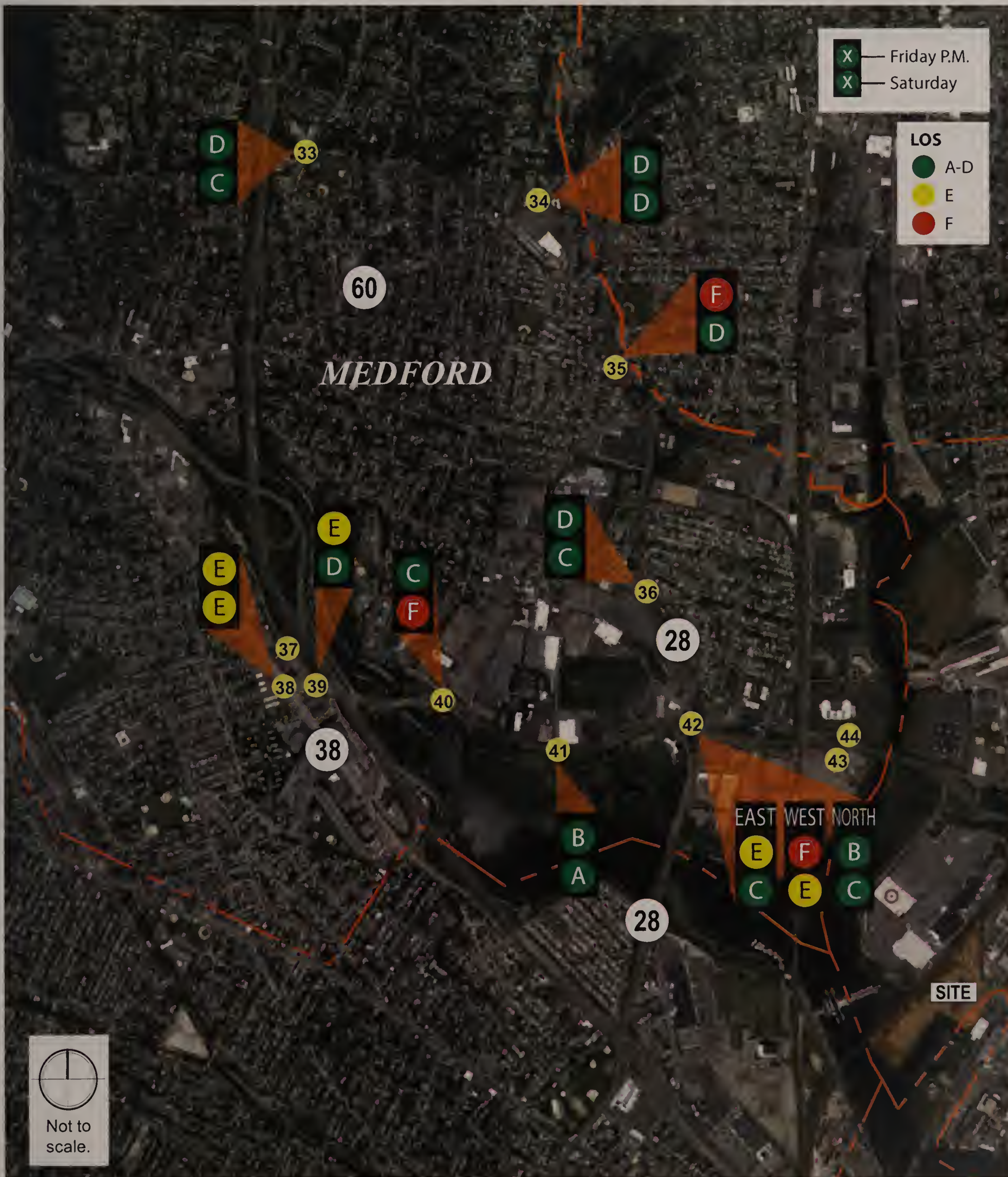

Figure 4-41
No-Build (2023) Peak Hour Capacity Analysis Summary, Medford
Source: Howard/Stein-Hudson Associates, Inc., 2013

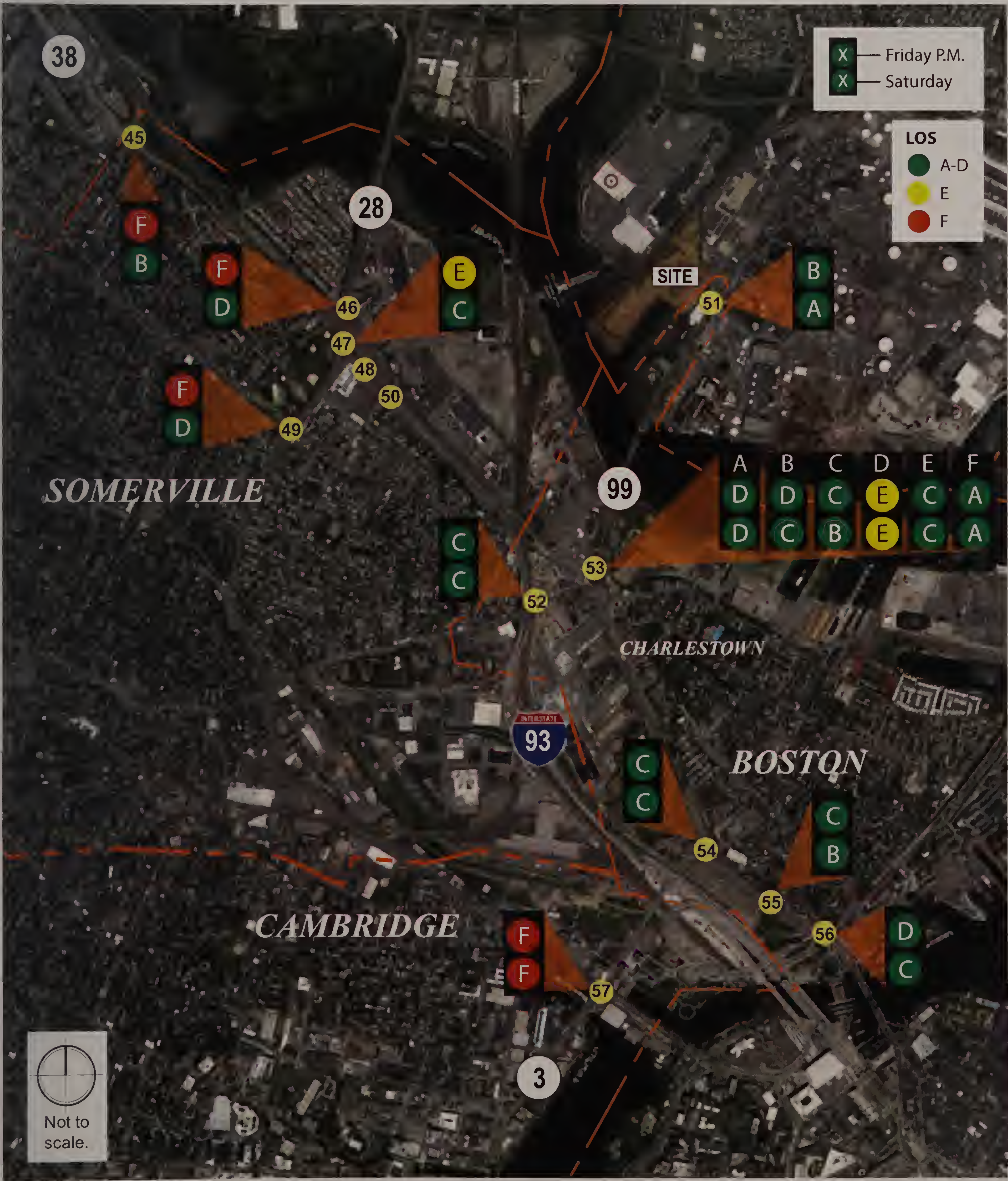

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Figure 4-42
No-Build (2023) Peak Hour Capacity Analysis Summary, Somerville, Boston and Cambridge
Source: Howard/Stein-Hudson Associates, Inc., 2013

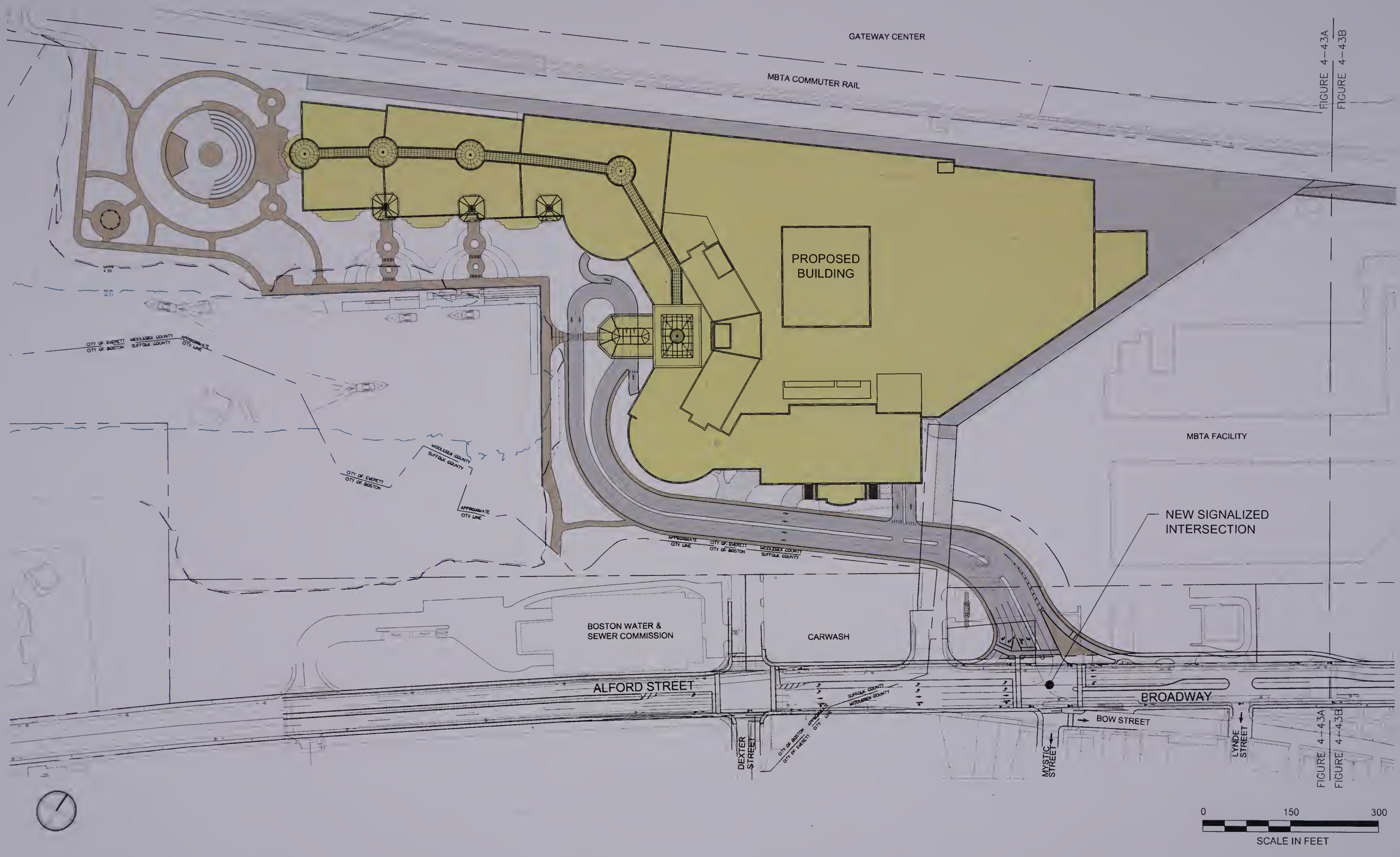

Figure 4-43A
Preferred Site Access Configuration
Source: Howard/Stein-Hudson Associates, Inc., 2013

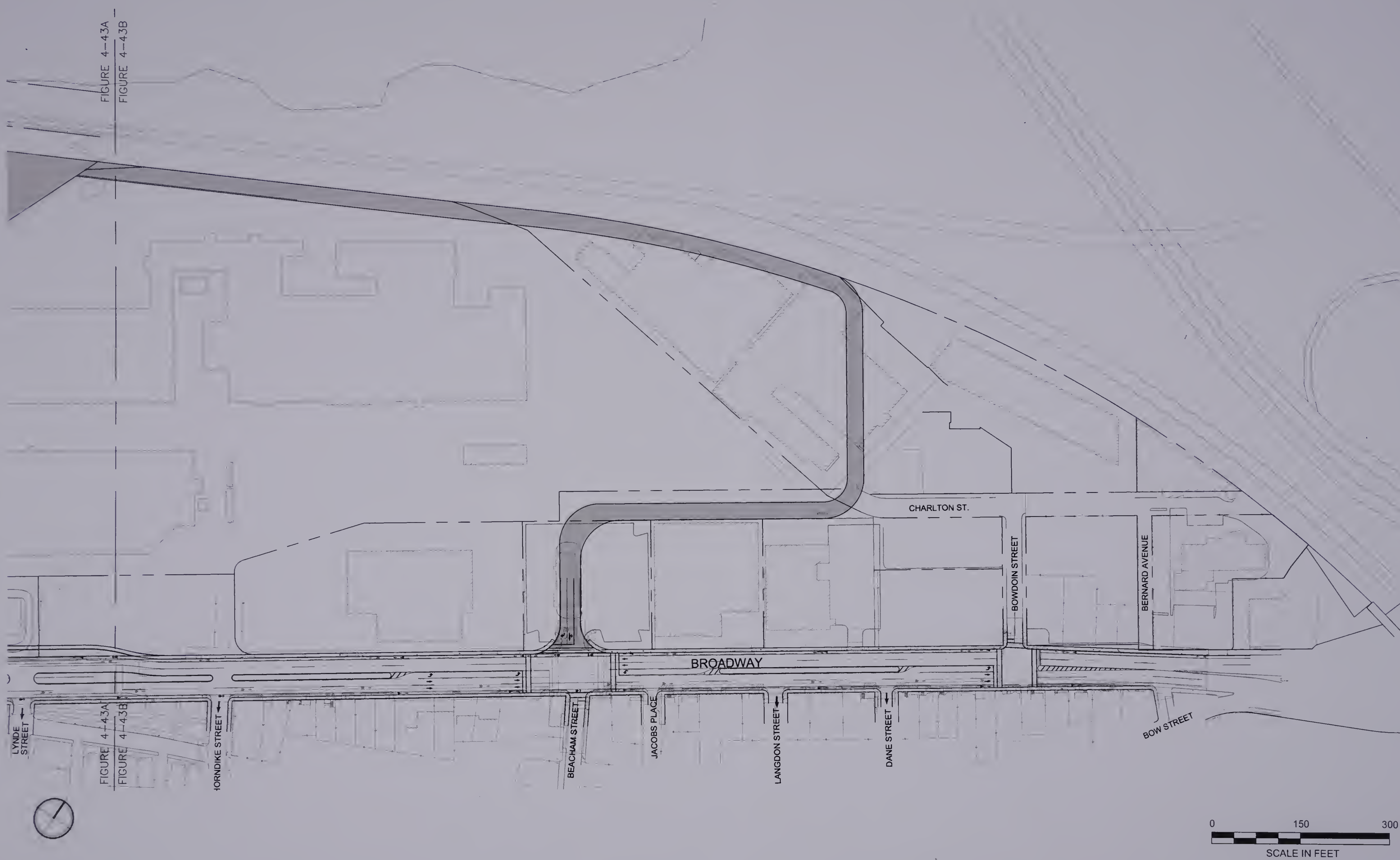

Figure 4-43B
Preferred Site Access Configuration
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-44
Truck and MBTA Access Routes
Source: Howard/Stein-Hudson Associates, Inc., 2013

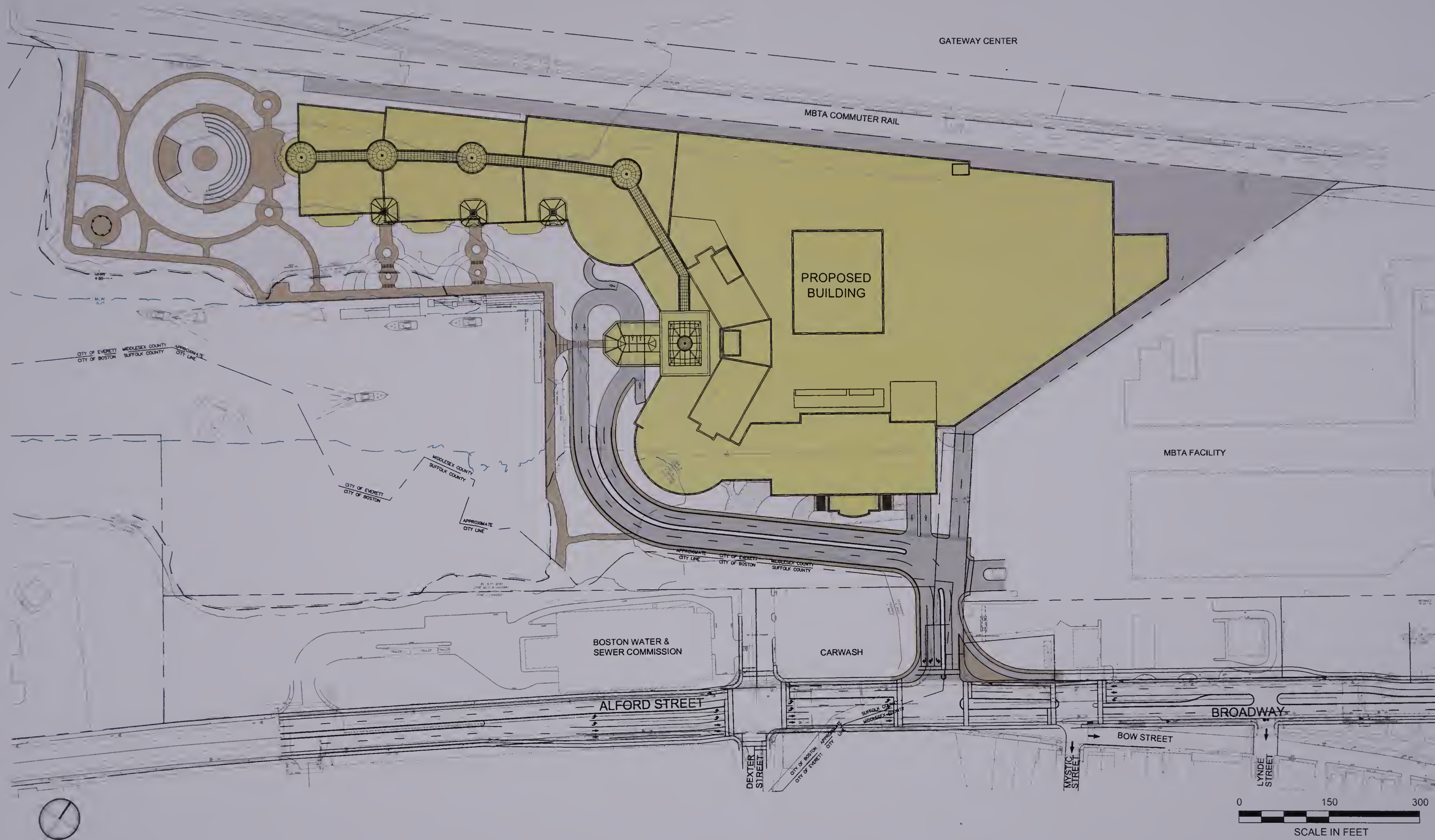

Figure 4-45
Alternate Site Access Configuration
Source: Howard/Stein-Hudson Associates, Inc., 2013

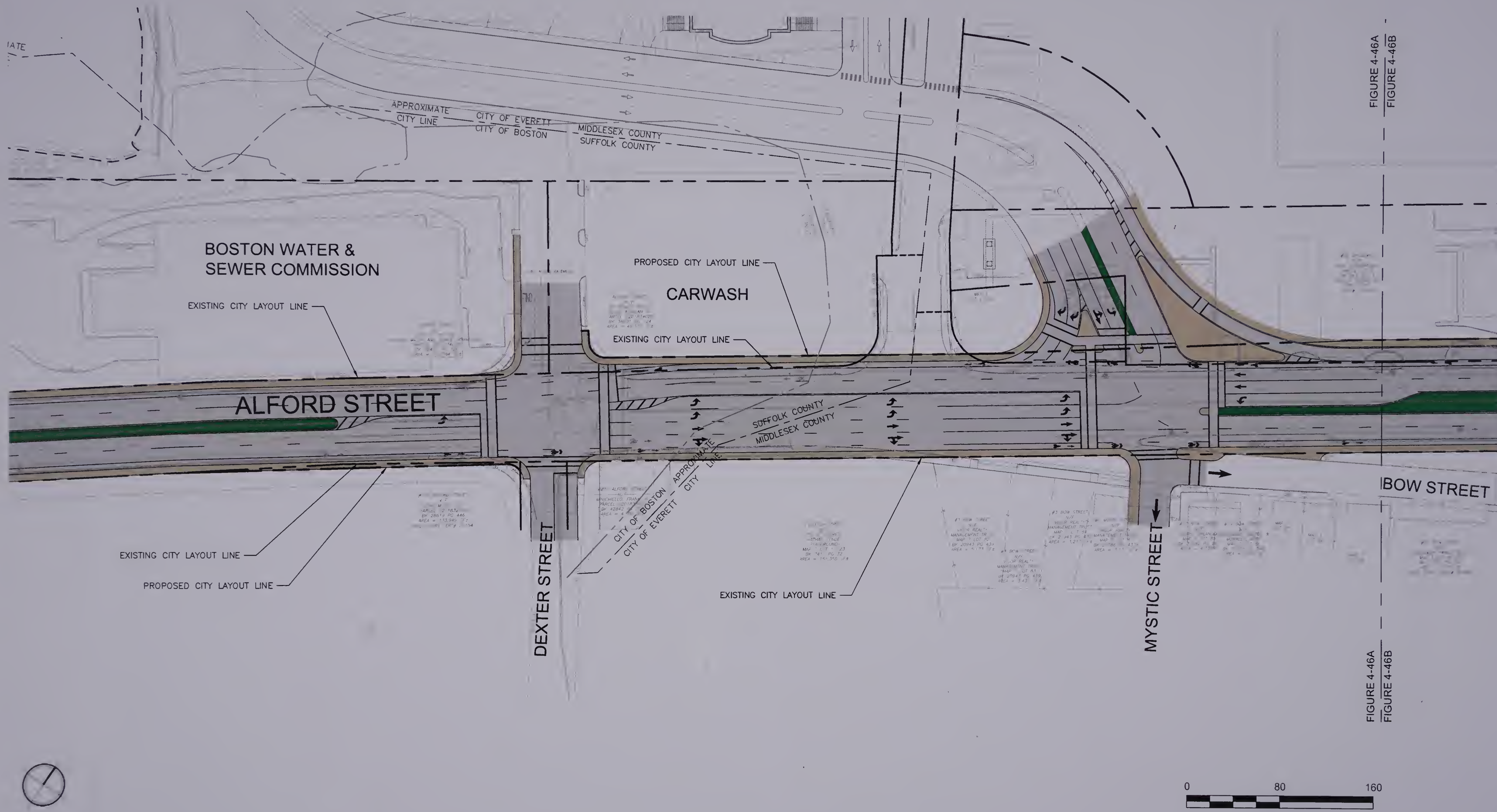

Figure 4-46A
Lower Broadway Improvement Plan
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-46B
Lower Broadway Improvement Plan
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-46C
Lower Broadway Improvement Plan
Source: Howard/Stein-Hudson Associates, Inc., 2013

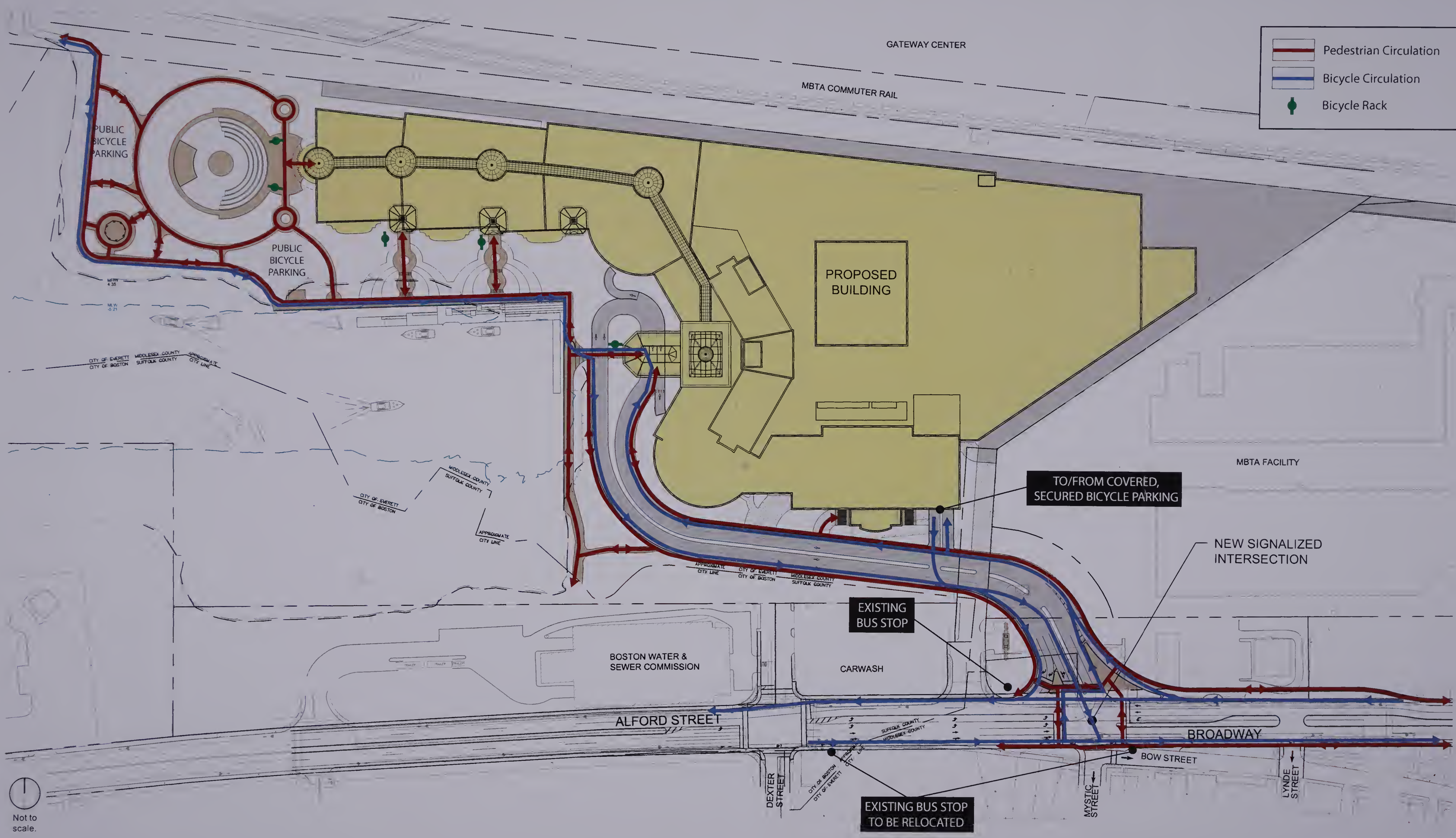

Figure 4-47
On-site Pedestrian and Bicycle Circulation
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-48
Proposed Pedestrian and Bicycle Connections
Source: *Shadley Associates P.C., 2013*

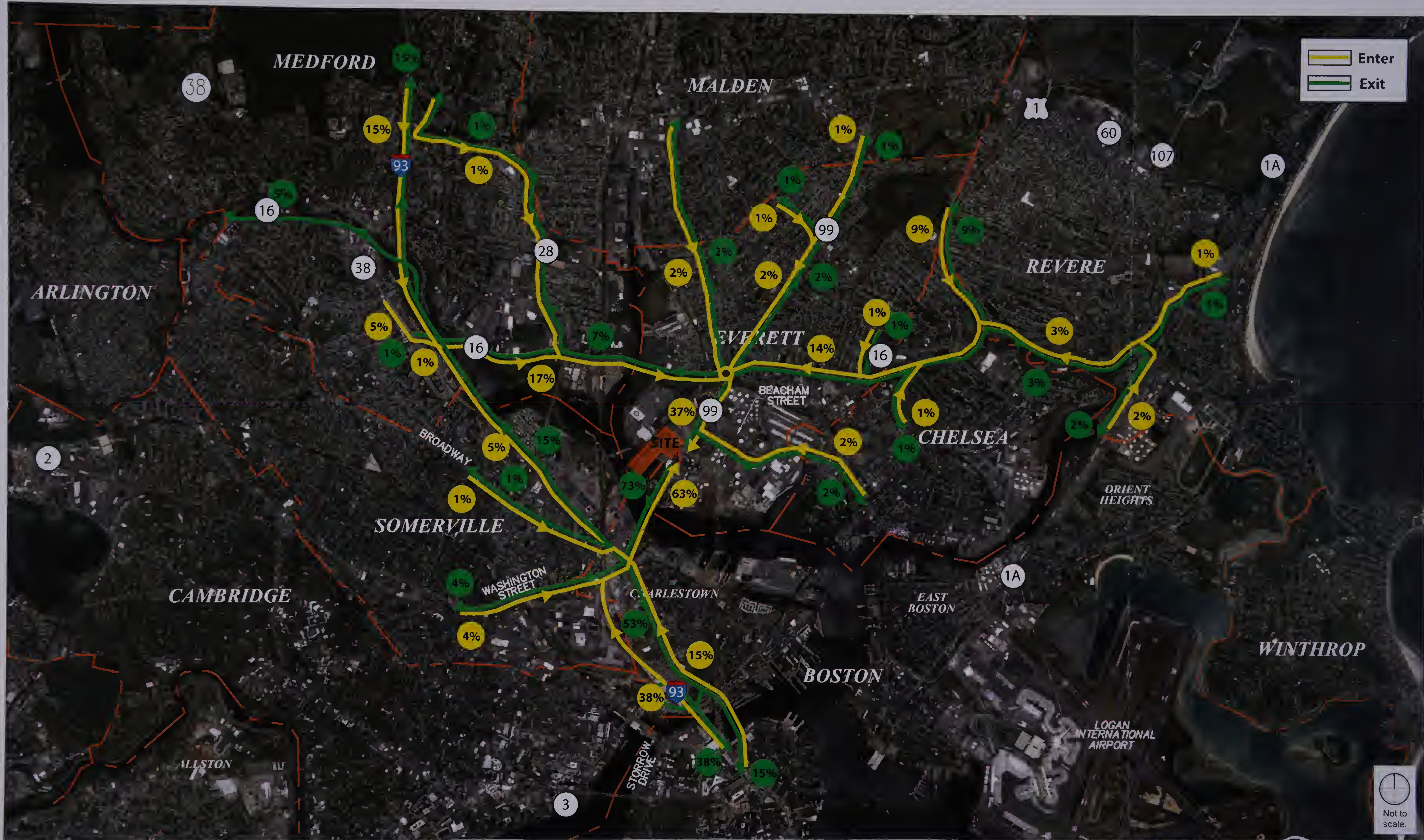

Figure 4-49
Trip Distribution (Patrons)
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-50
Trip Distribution (Employees)
Source: Howard/Stein-Hudson Associates, Inc., 2013

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Figure 4-51
Composite Trip Distribution (Patrons and Employees)
Source: Howard/Stein-Hudson Associates, Inc., 2013

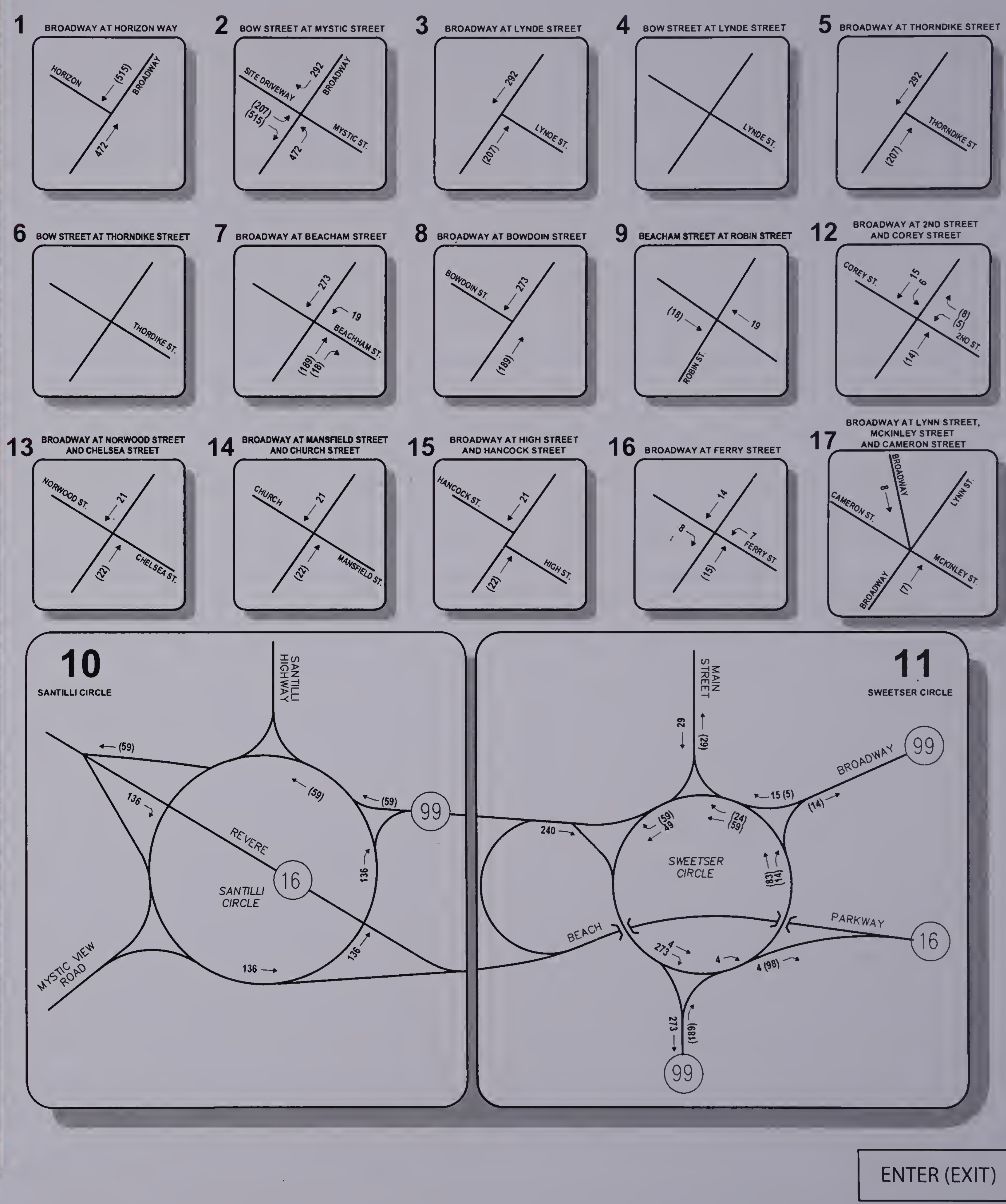

Figure 4-52A
Friday p.m. Peak Hour Project-generated Trips, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-52B
Friday p.m. Peak Hour Project-generated Trips, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-53
Friday p.m. Peak Hour Project-generated Trips, Chelsea and Revere
Source: Howard/Stein-Hudson Associates, Inc., 2013

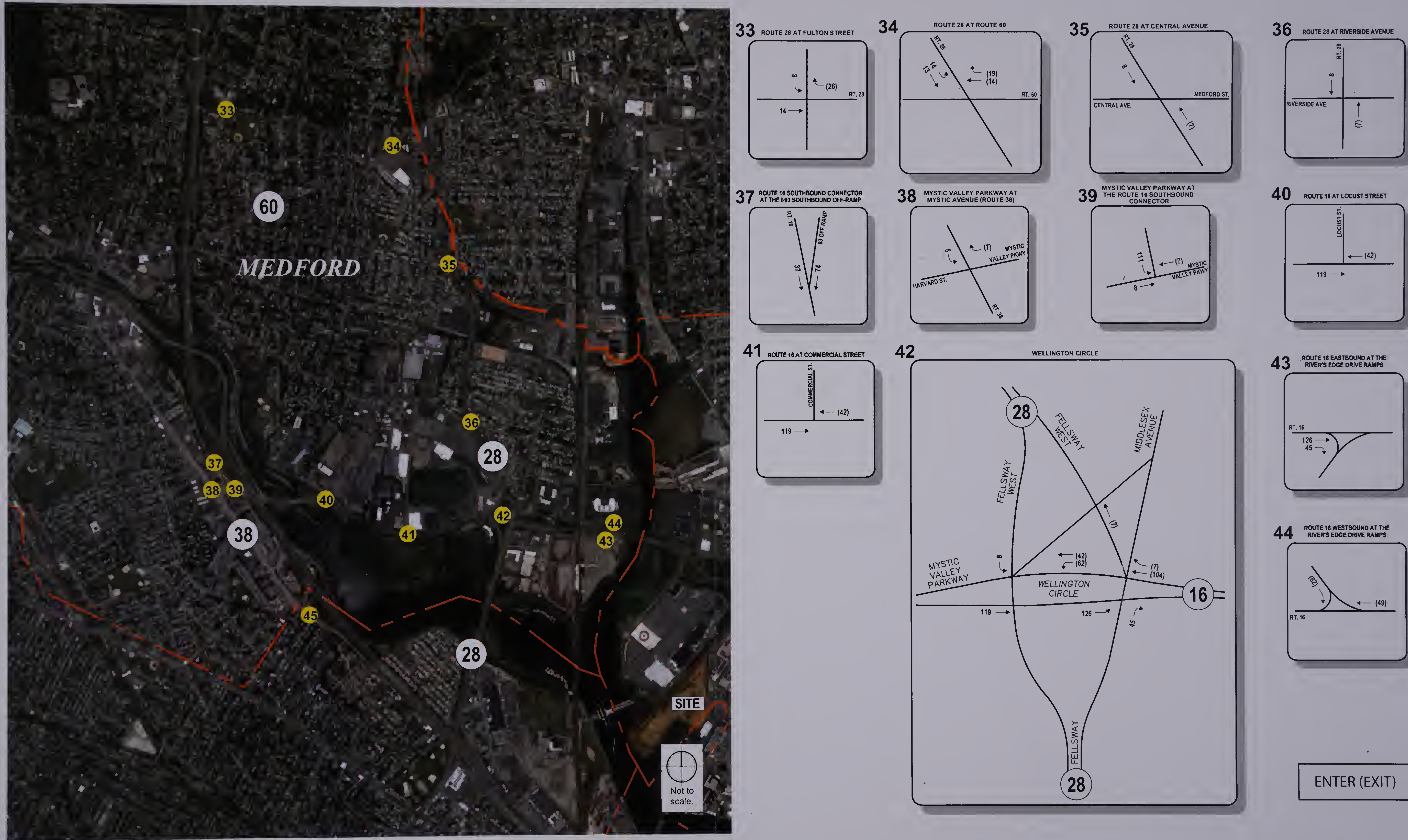

Figure 4-54
Friday p.m. Peak Hour Project-generated Trips, Medford
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-55
Friday p.m. Peak Hour Project-generated Trips, Somerville, Boston, and Cambridge
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-56A
Saturday Afternoon Peak Hour Project-generated Trips, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

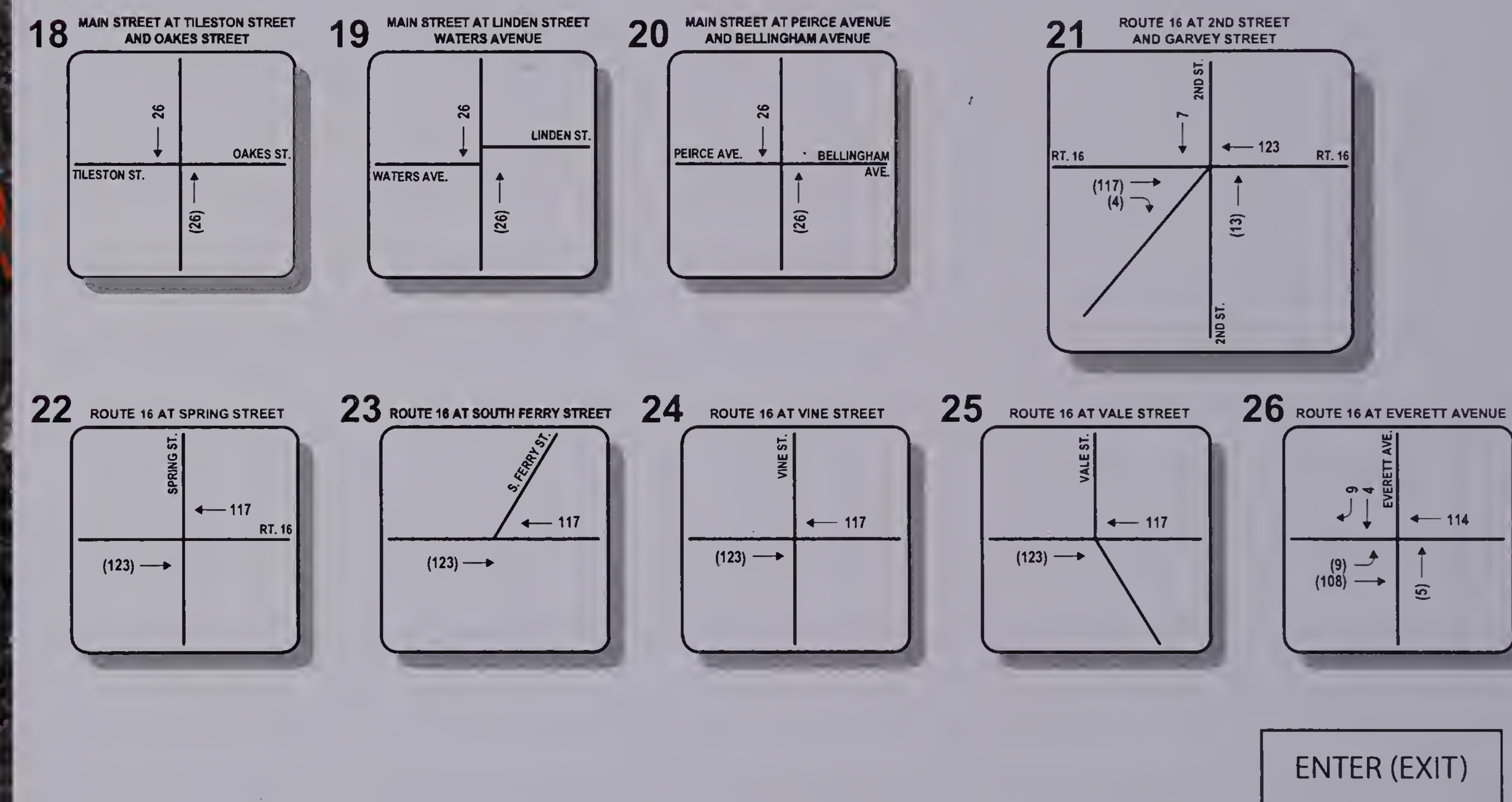

Figure 4-56B
Saturday Afternoon Peak Hour Project-generated Trips, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-57
Saturday Afternoon Peak Hour Project-generated Trips, Chelsea and Revere
Source: Howard/Stein-Hudson Associates, Inc., 2013

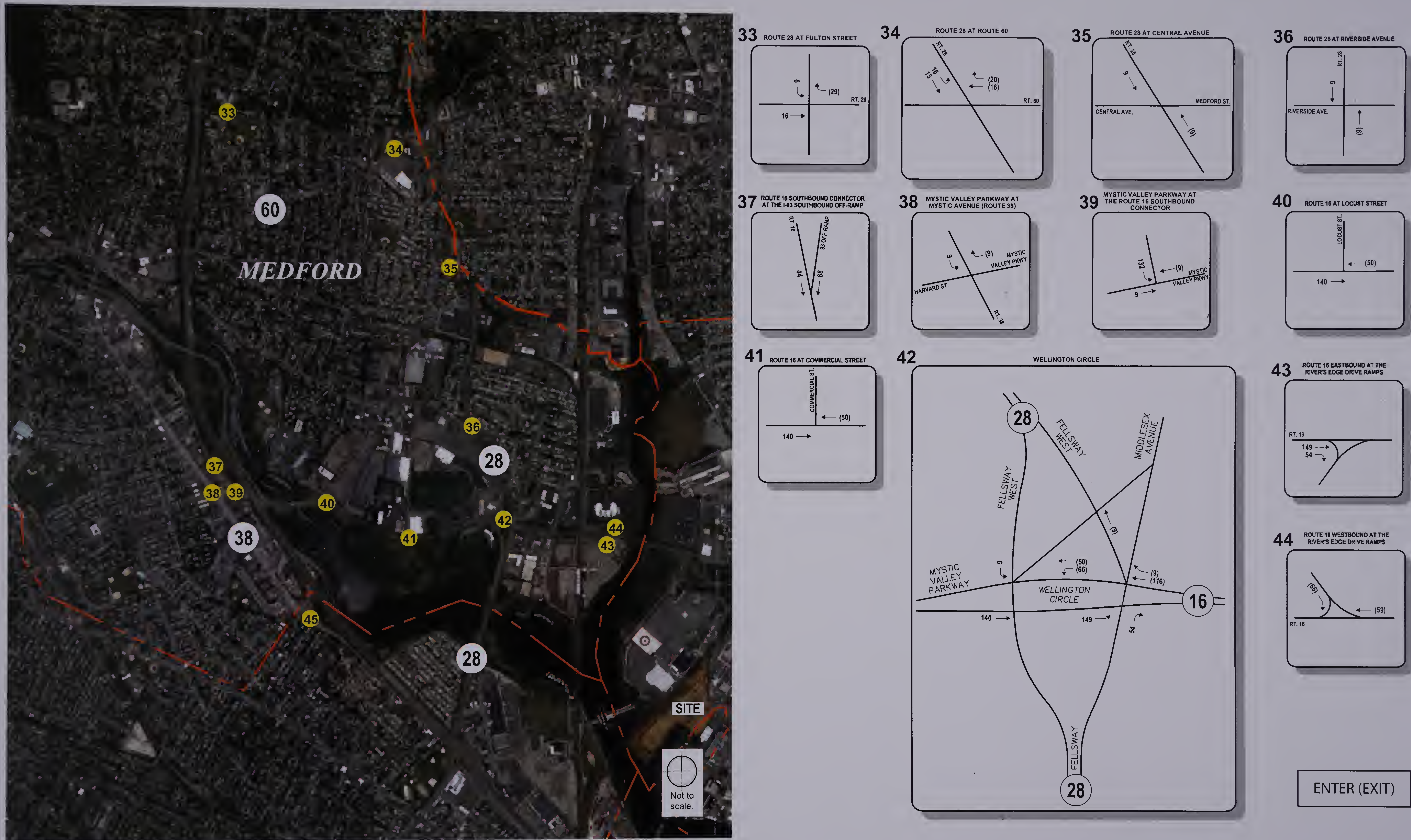

Figure 4-58
Saturday Afternoon Peak Hour Project-generated Trips, Medford
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-59
Saturday Afternoon Peak Hour Project-generated Trips, Somerville, Boston, and Cambridge
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-60A
Build (2023) Friday p.m. Peak Hour Traffic Volumes, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-60B
Build (2023) Friday p.m. Peak Hour Traffic Volumes, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-61
Build (2023) Friday p.m. Peak Hour Traffic Volumes, Revere and Chelsea
Source: Howard/Stein-Hudson Associates, Inc., 2013

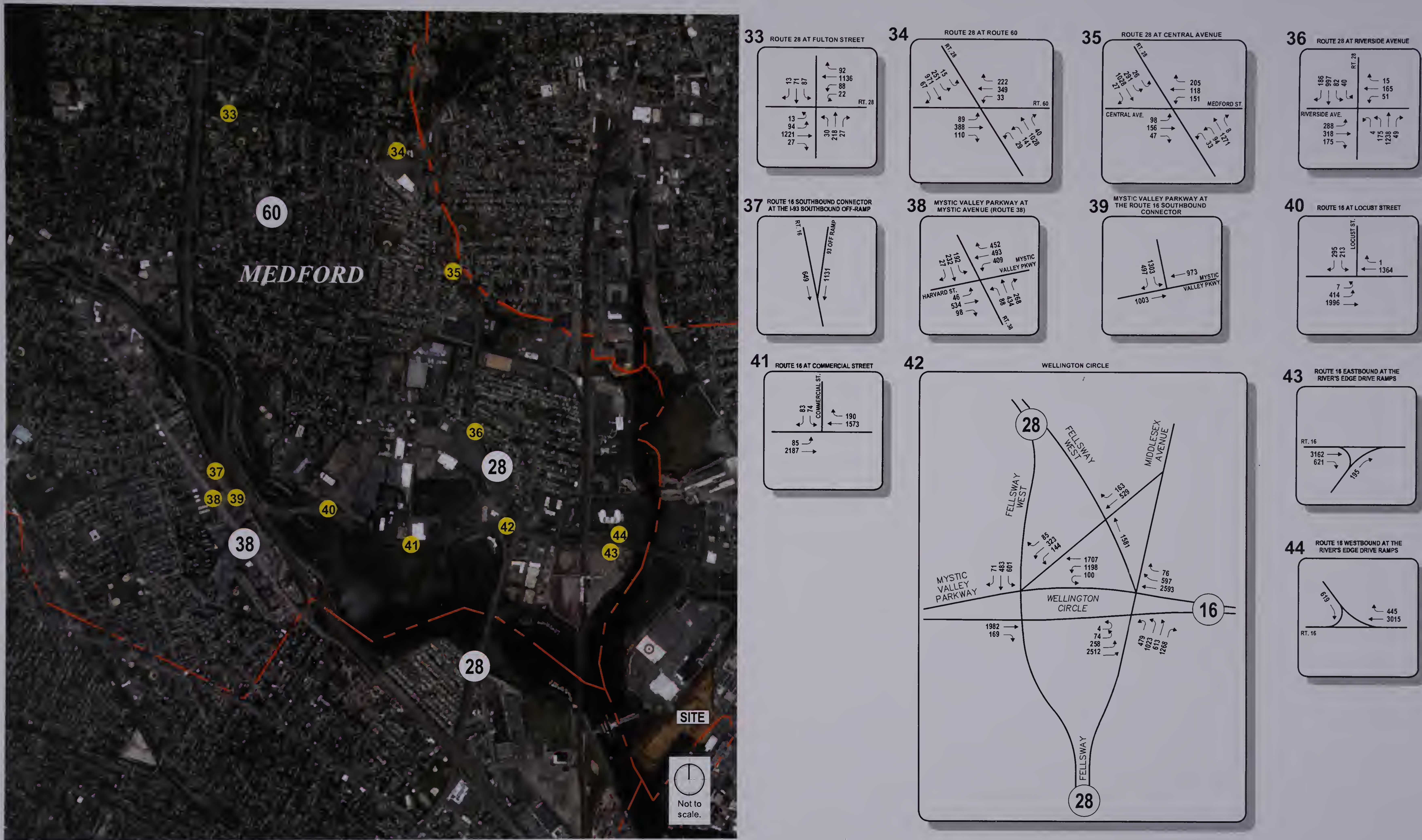

Figure 4-62
Build (2023) Friday p.m. Peak Hour Traffic Volumes, Medford
Source: Howard/Stein-Hudson Associates, Inc., 2013

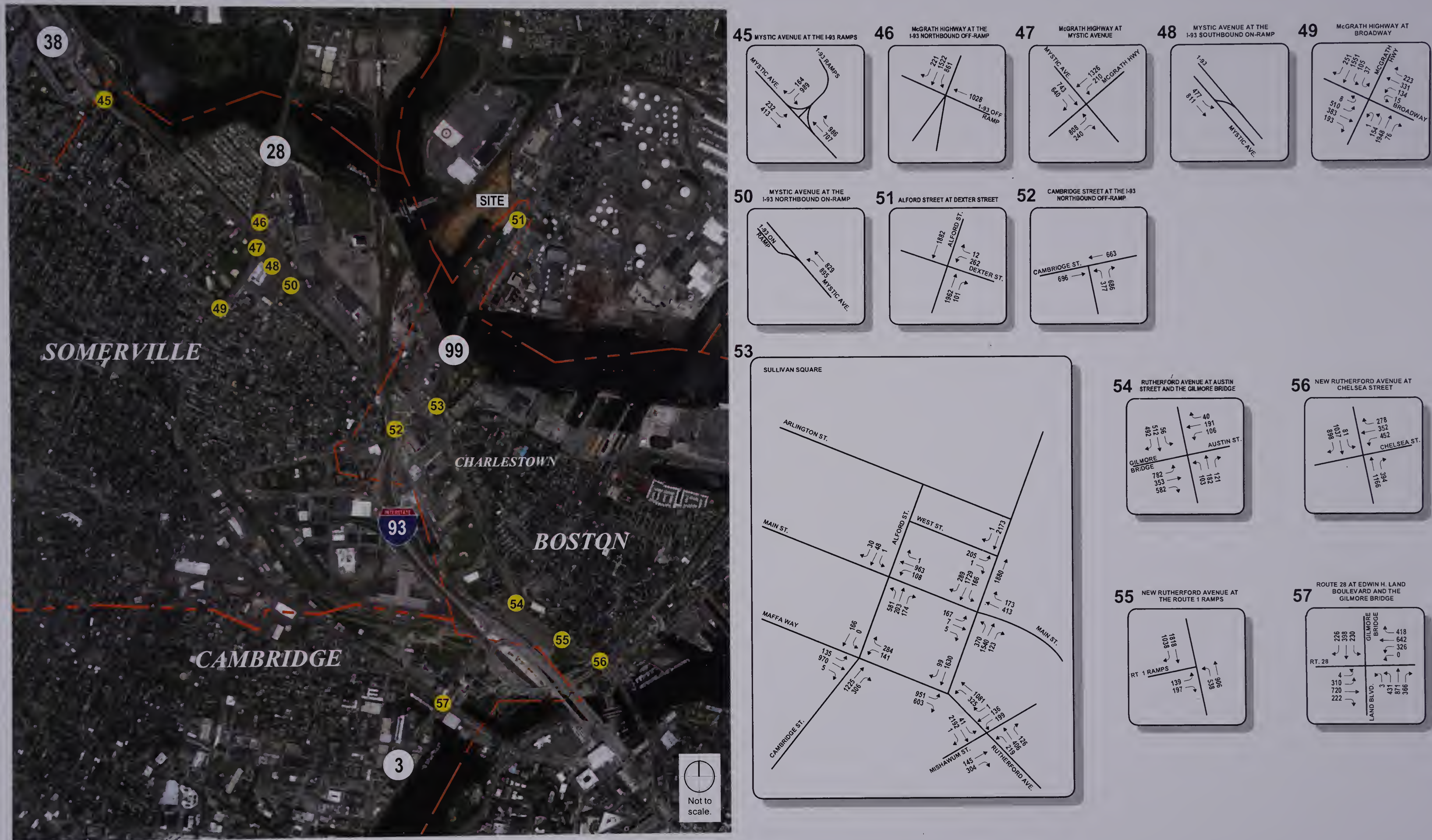

Figure 4-63
Build (2023) Friday p.m. Peak Hour Traffic Volumes, Somerville, Boston, and Cambridge
Source: Howard/Stein-Hudson Associates, Inc., 2013

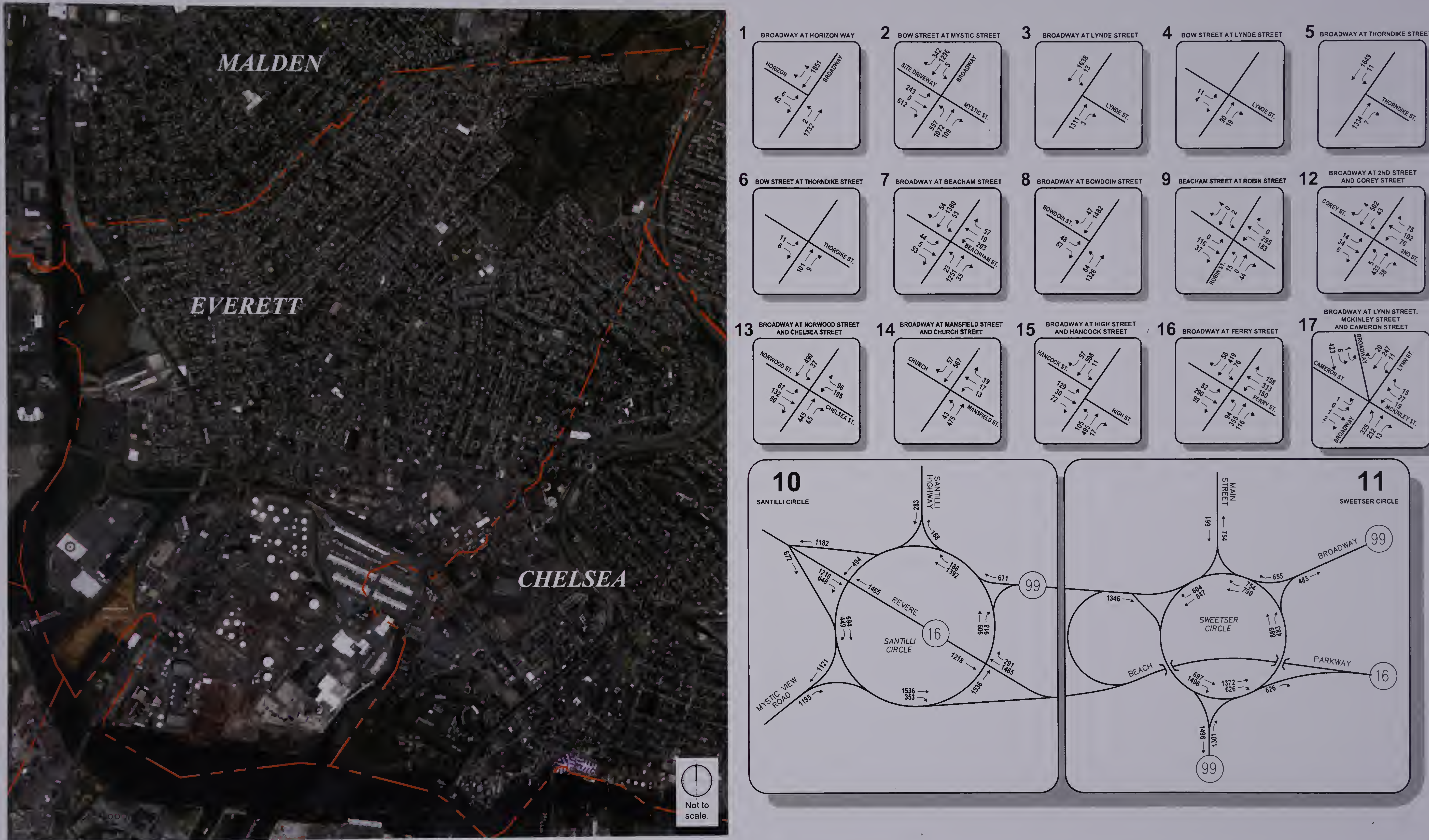

Figure 4-64A
Build (2023) Saturday Afternoon Peak Hour Traffic Volumes, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

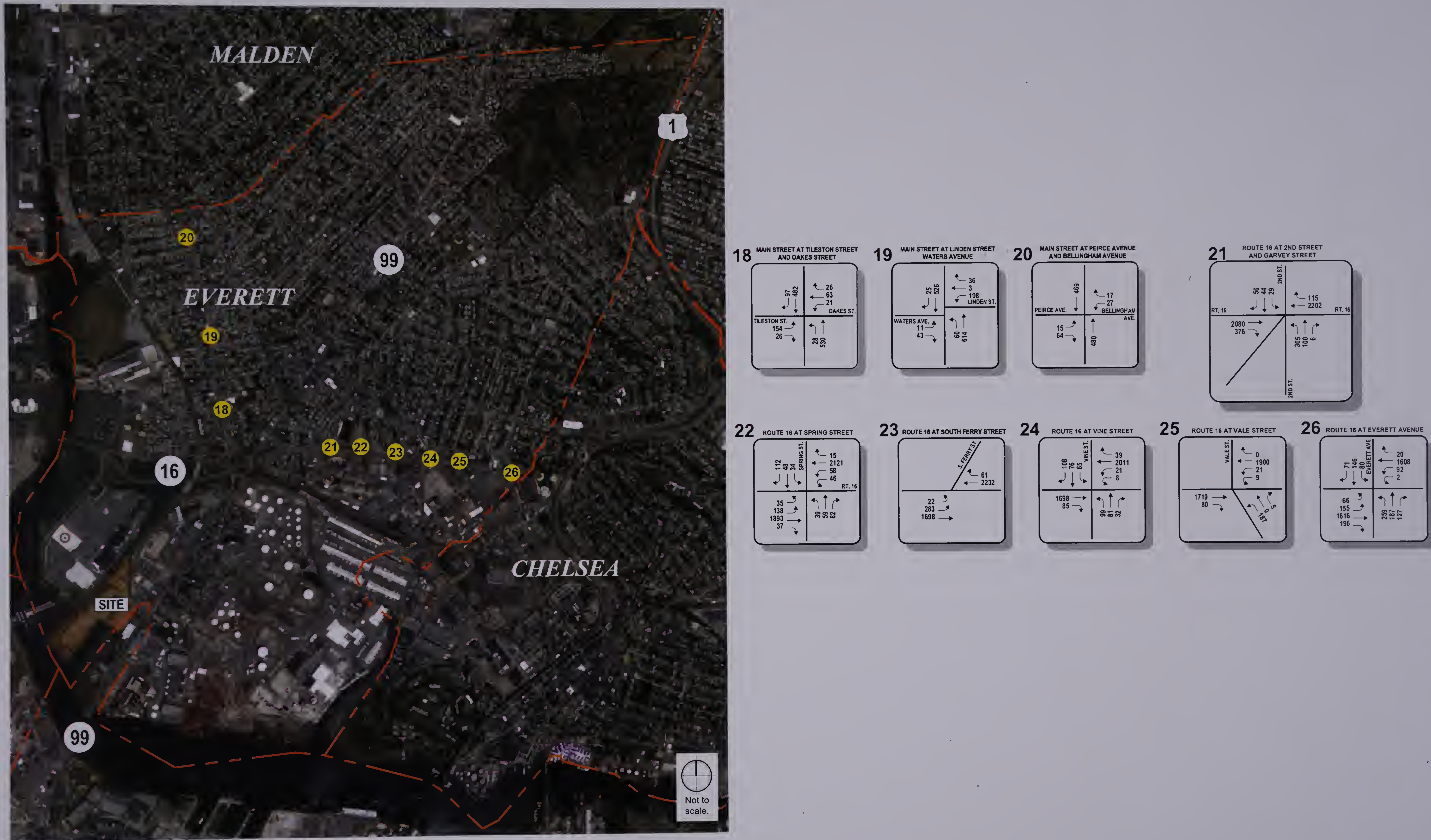

Figure 4-64B
Build (2023) Saturday Afternoon Peak Hour Traffic Volumes, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-65
Build (2023) Saturday Afternoon Peak Hour Traffic Volumes, Revere and Chelsea
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-66
Build (2023) Saturday Afternoon Peak Hour Traffic Volumes, Medford
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-67
Build (2023) Saturday Afternoon Peak Hour Traffic Volumes, Somerville, Boston, and Cambridge
Source: Howard/Stein-Hudson Associates, Inc., 2013

Wynn Everett
Everett, Massachusetts

Figure 4-68A
Build (2023) Peak Hour Capacity Analysis Summary, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

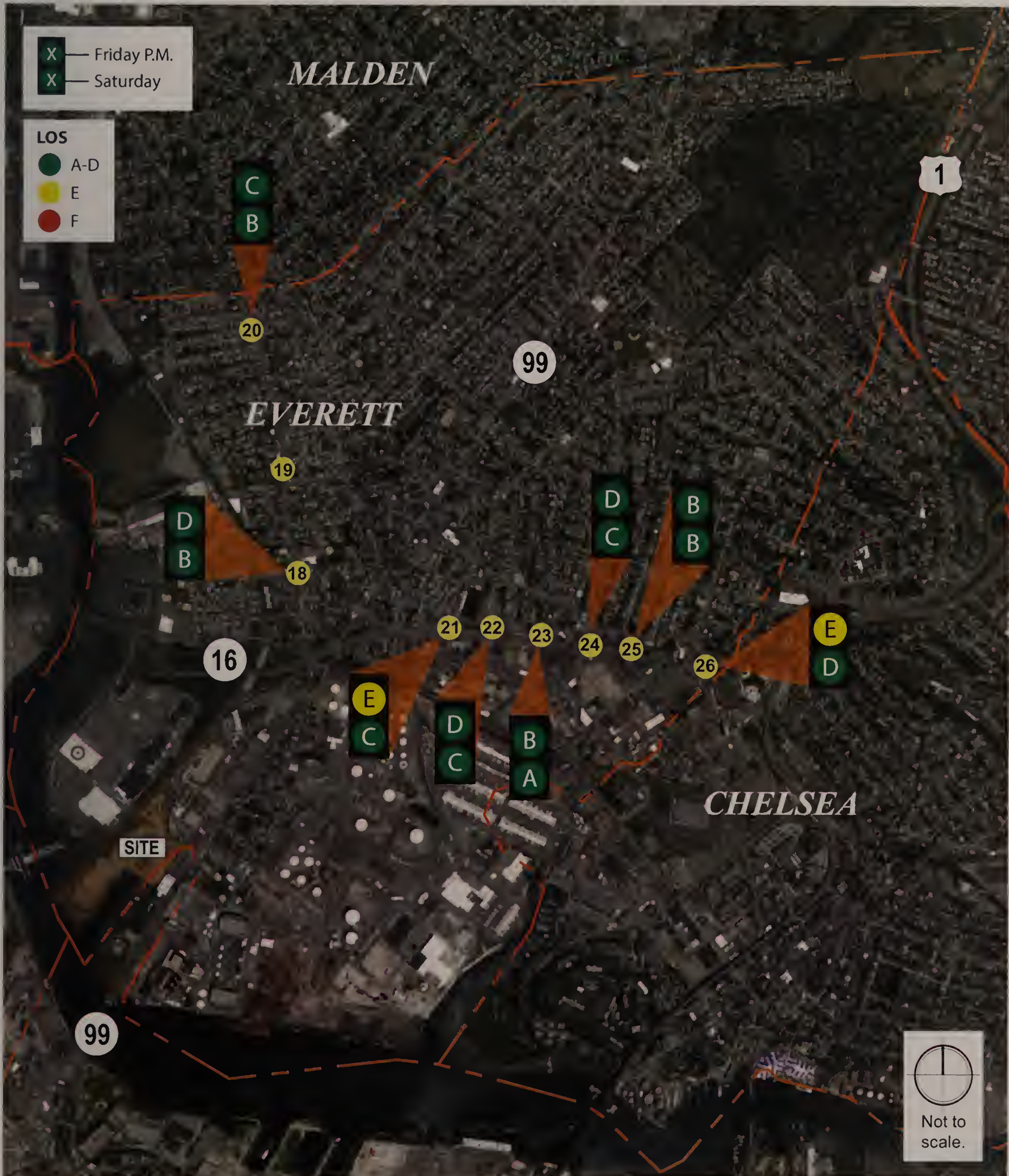

Figure 4-68B
Build (2023) Peak Hour Capacity Analysis Summary, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Wynn Everett
Everett, Massachusetts

Figure 4-69
Build (2023) Peak Hour Capacity Analysis Summary, Chelsea and Revere
Source: Howard/Stein-Hudson Associates, Inc., 2013

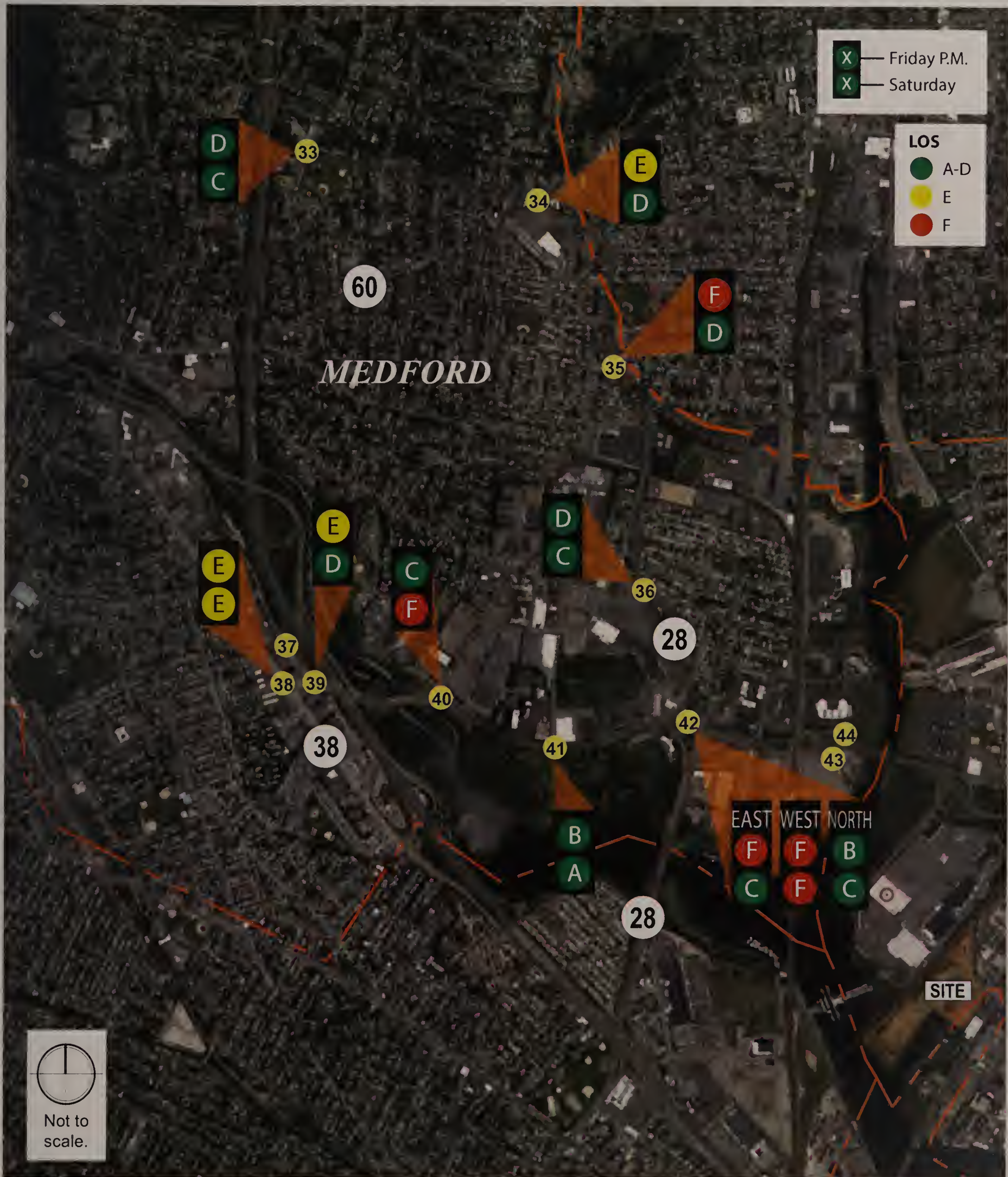

Figure 4-70
Build (2023) Peak Hour Capacity Analysis Summary, Medford
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-71
Build (2023) Peak Hour Capacity Analysis Summary, Somerville, Boston and Cambridge
Source: Howard/Stein-Hudson Associates, Inc., 2013

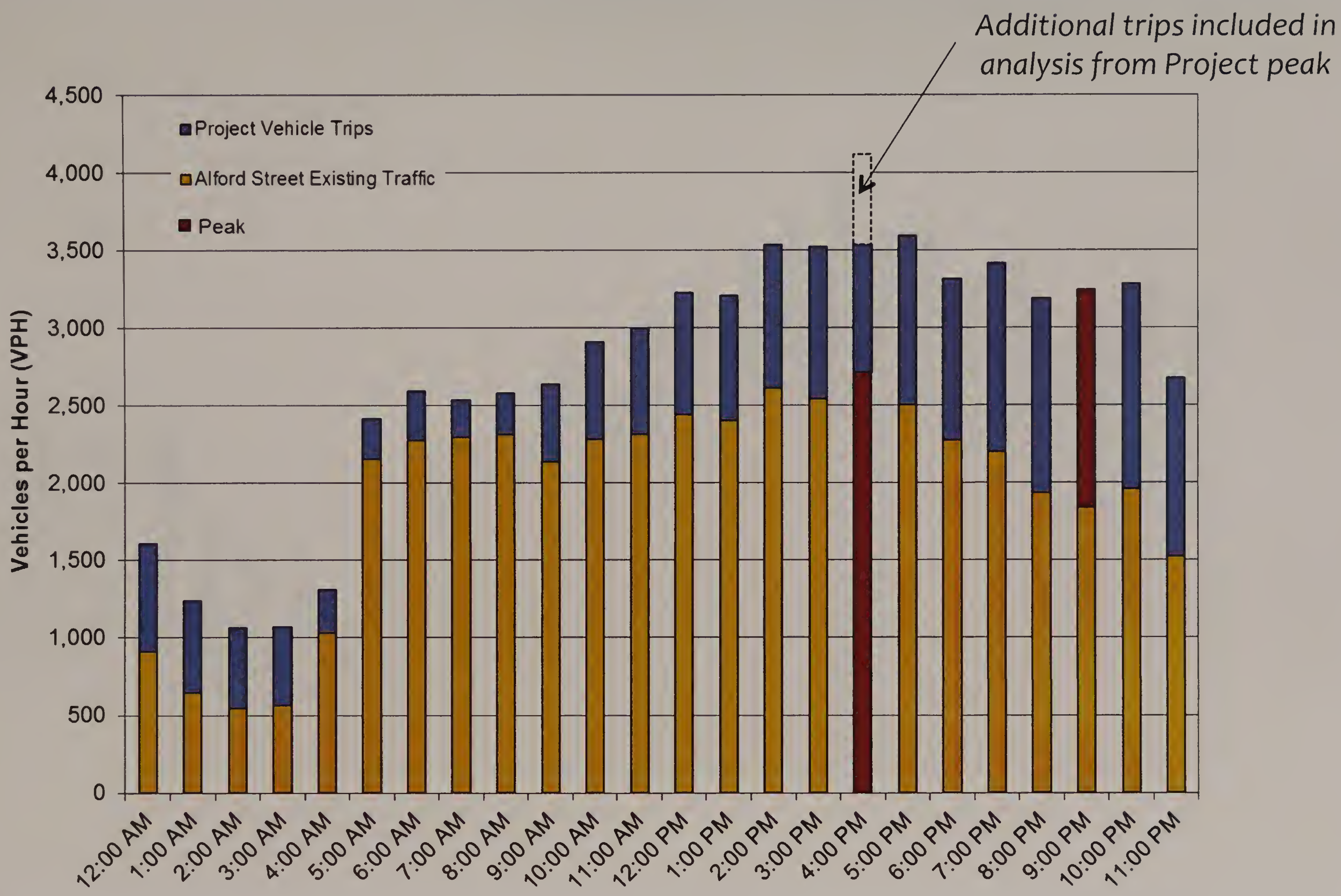

Figure 4-72
Comparison of Build "Real" Volumes vs. Peak + Peak Volumes, Friday p.m. Peak Hour
Source: Howard/Stein-Hudson Associates, Inc., 2013

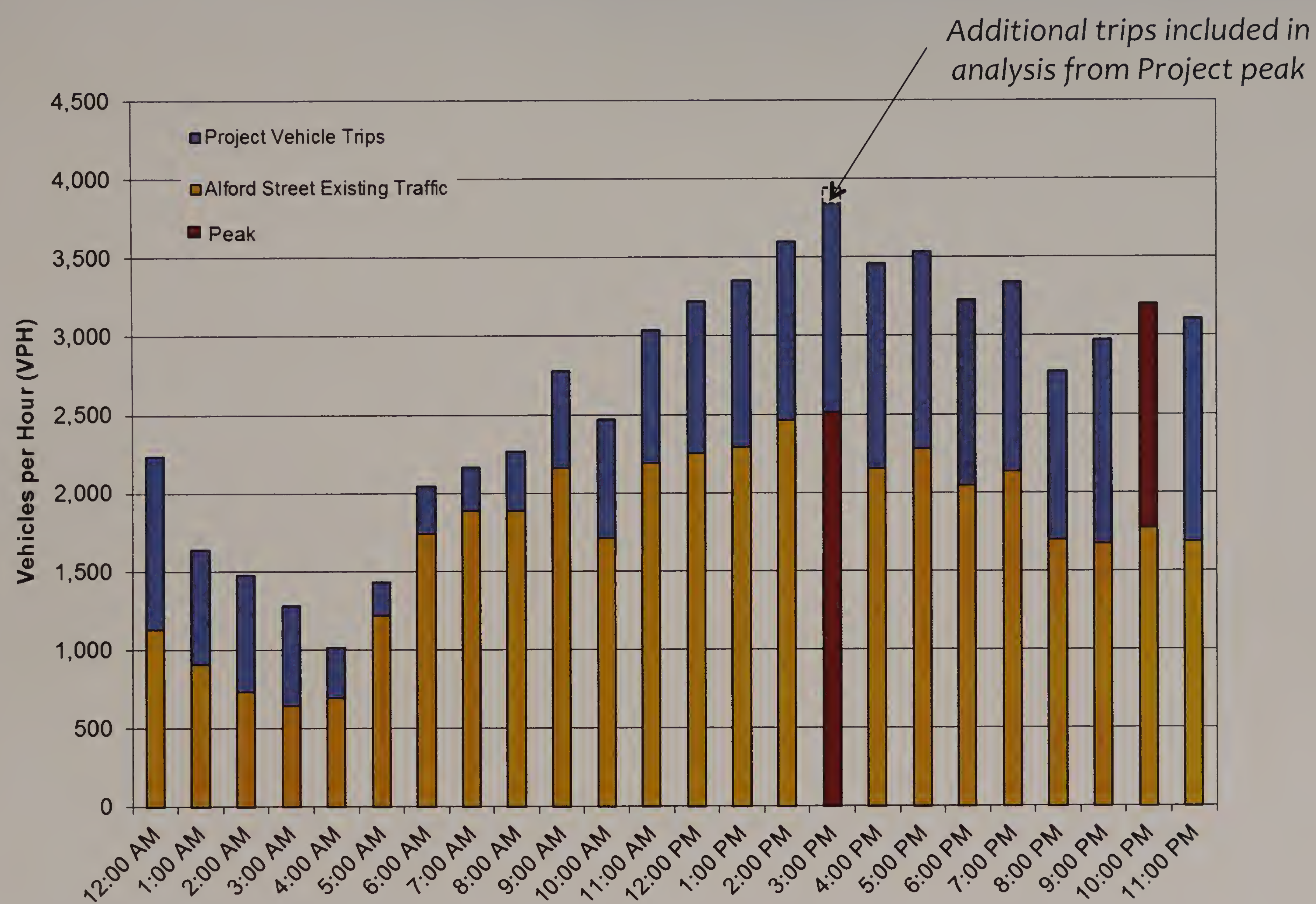

Figure 4-73
Comparison of Build "Real" Volumes vs. Peak + Peak Volumes, Saturday Afternoon Peak Hour
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-74
Build "Real" (2023) Friday p.m. Peak Hour Volumes, Selected Lower Broadway (Route 99) Intersections, Everett and Boston
Source: Howard/Stein-Hudson Associates, Inc., 2013

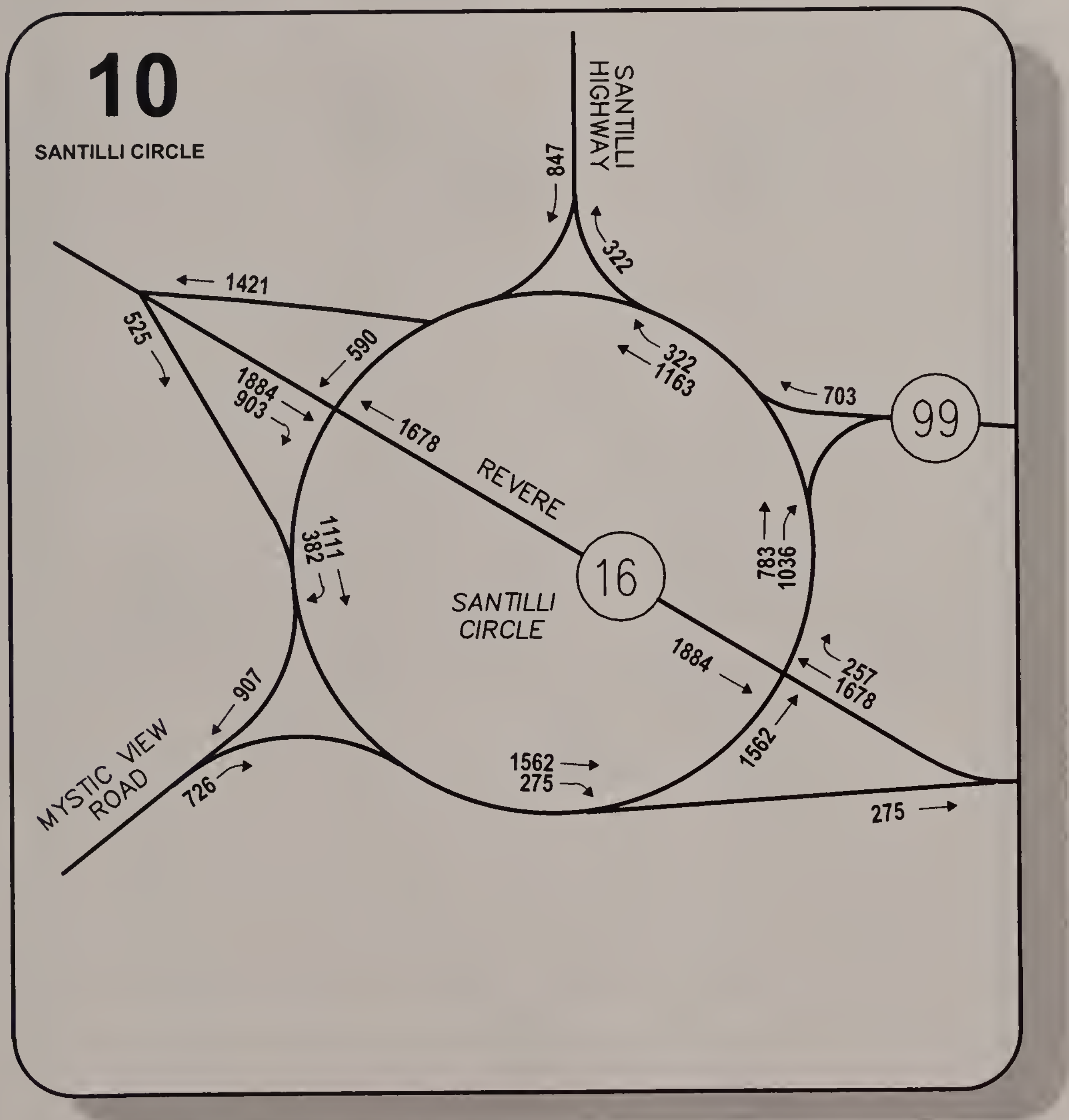

Figure 4-75
Build "Real" (2023) Friday p.m. Peak Hour Volumes, Santilli Circle, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

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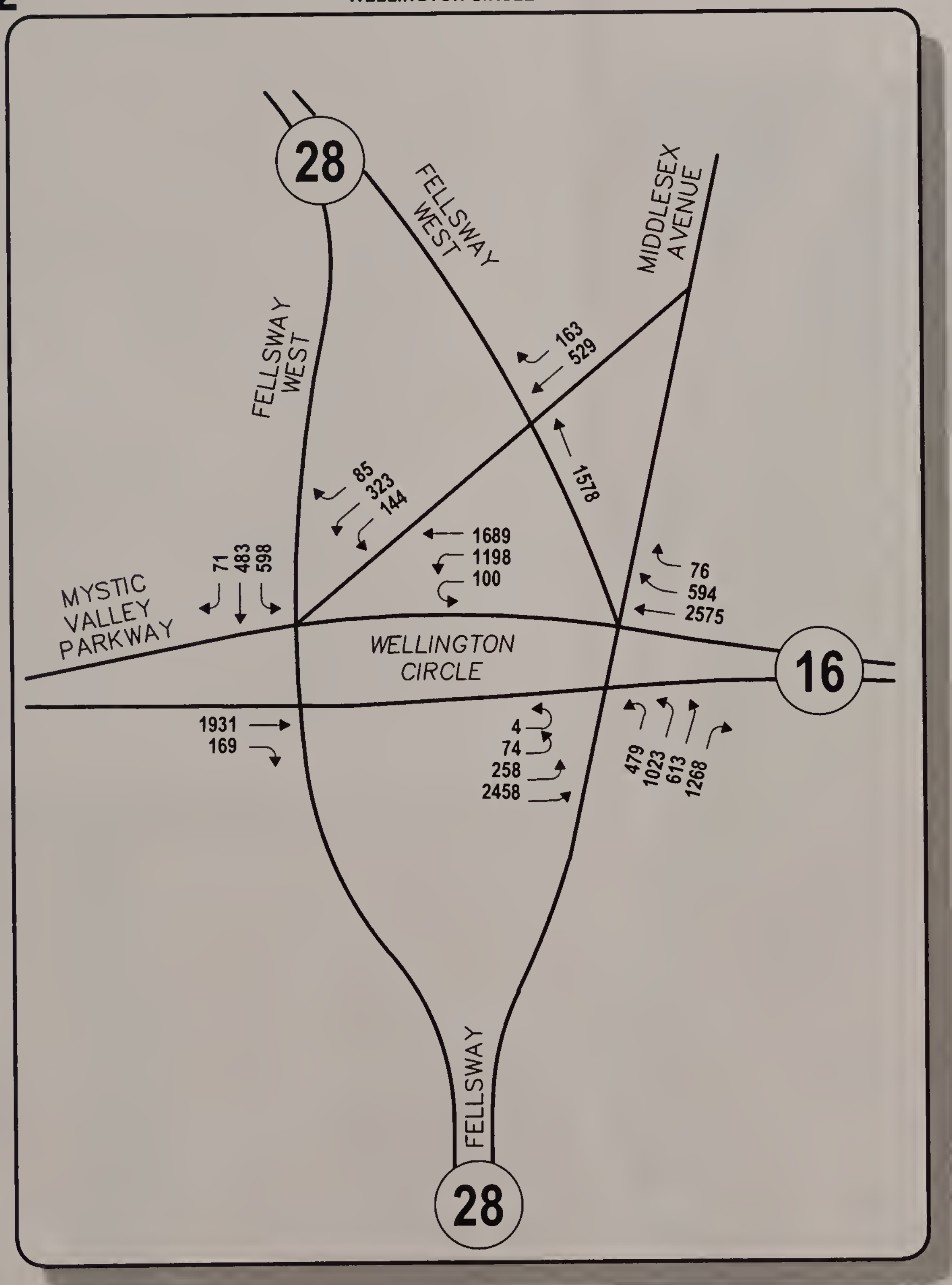

Figure 4-76
Build "Real" (2023) Friday p.m. Peak Hour Volumes, Wellington Circle, Medford
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-77
Build "Real" (2023) Friday p.m. Peak Hour Volumes, Sullivan Square, Boston
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-78
Build "Real" (2023) Friday p.m. Peak Hour Capacity Analysis Summary, Selected Lower Broadway (Route 99) Intersections, Everett and Boston
Source: Howard/Stein-Hudson Associates, Inc., 2013

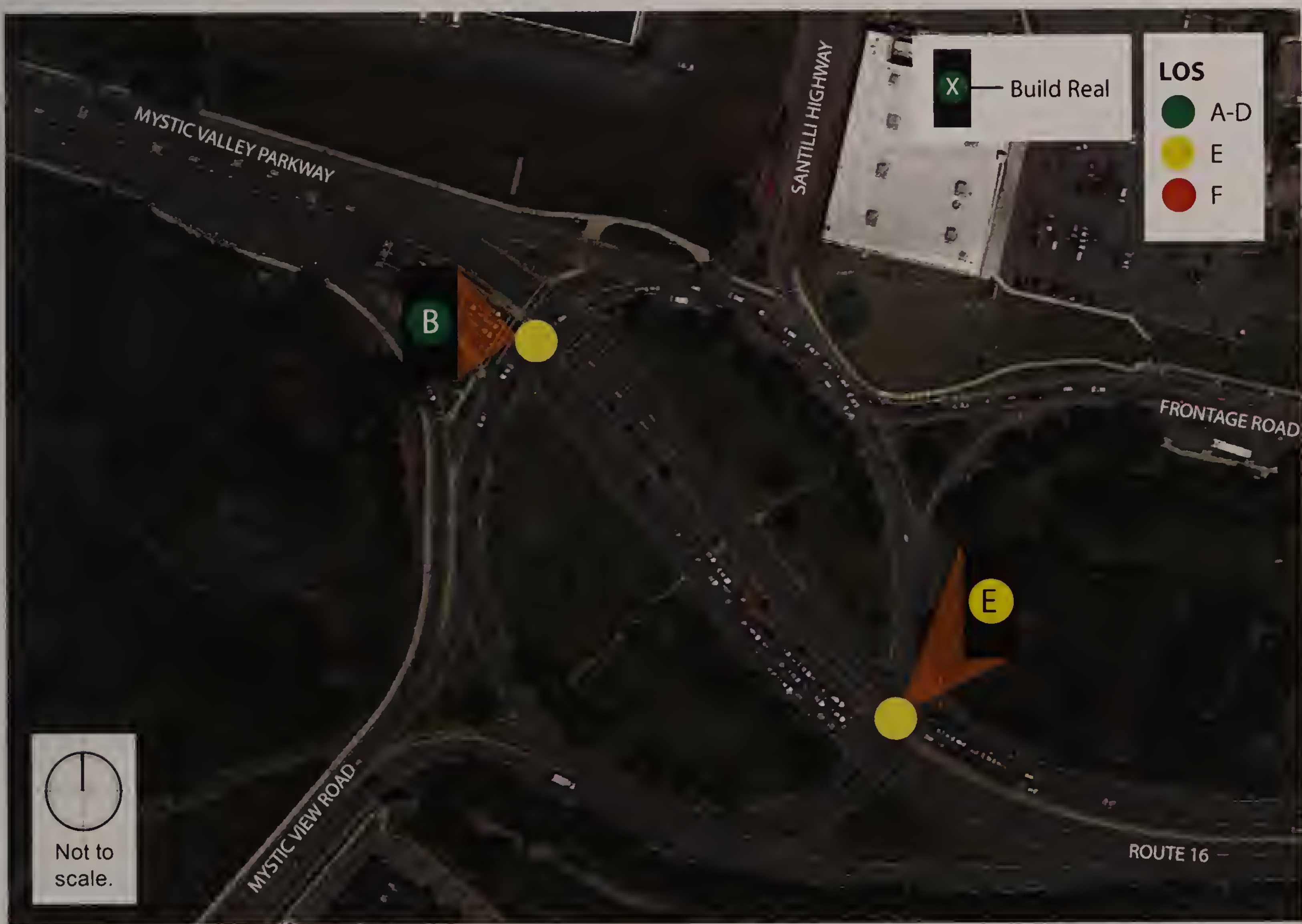

Figure 4-79
Build "Real" (2023) Friday p.m. Peak Hour Capacity Analysis Summary, Santilli Circle, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-80
Build "Real" (2023) Friday p.m. Peak Hour Capacity Analysis Summary, Wellington Circle, Medford
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-81
Build "Real" (2023) Friday p.m. Peak Hour Capacity Analysis Summary, Sullivan Square, Boston
Source: Howard/Stein-Hudson Associates, Inc., 2013

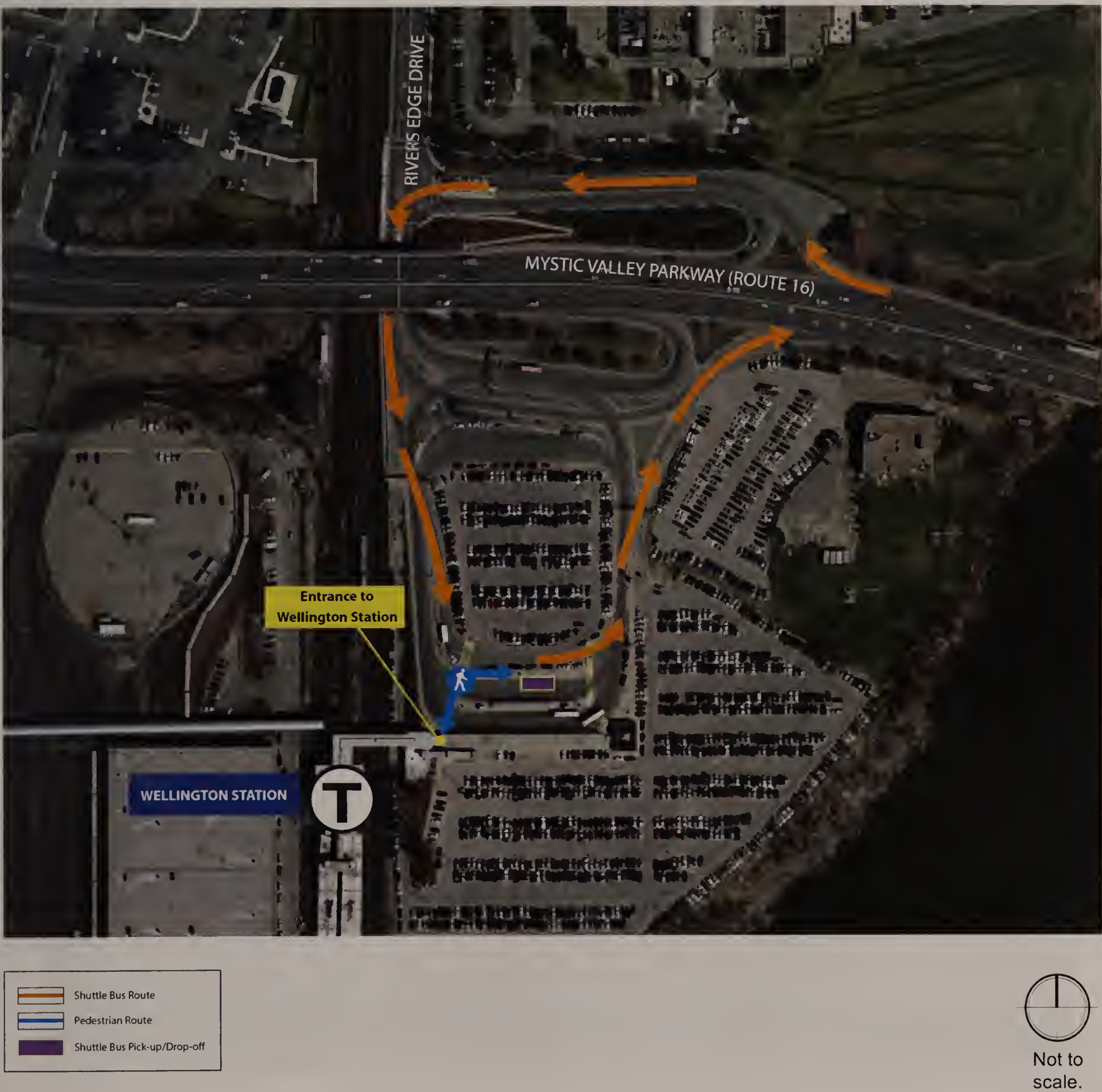

Figure 4-82
Shuttle Bus and Pedestrian Routes, Wellington Station, Medford
Source: Howard/Stein-Hudson Associates, Inc., 2013

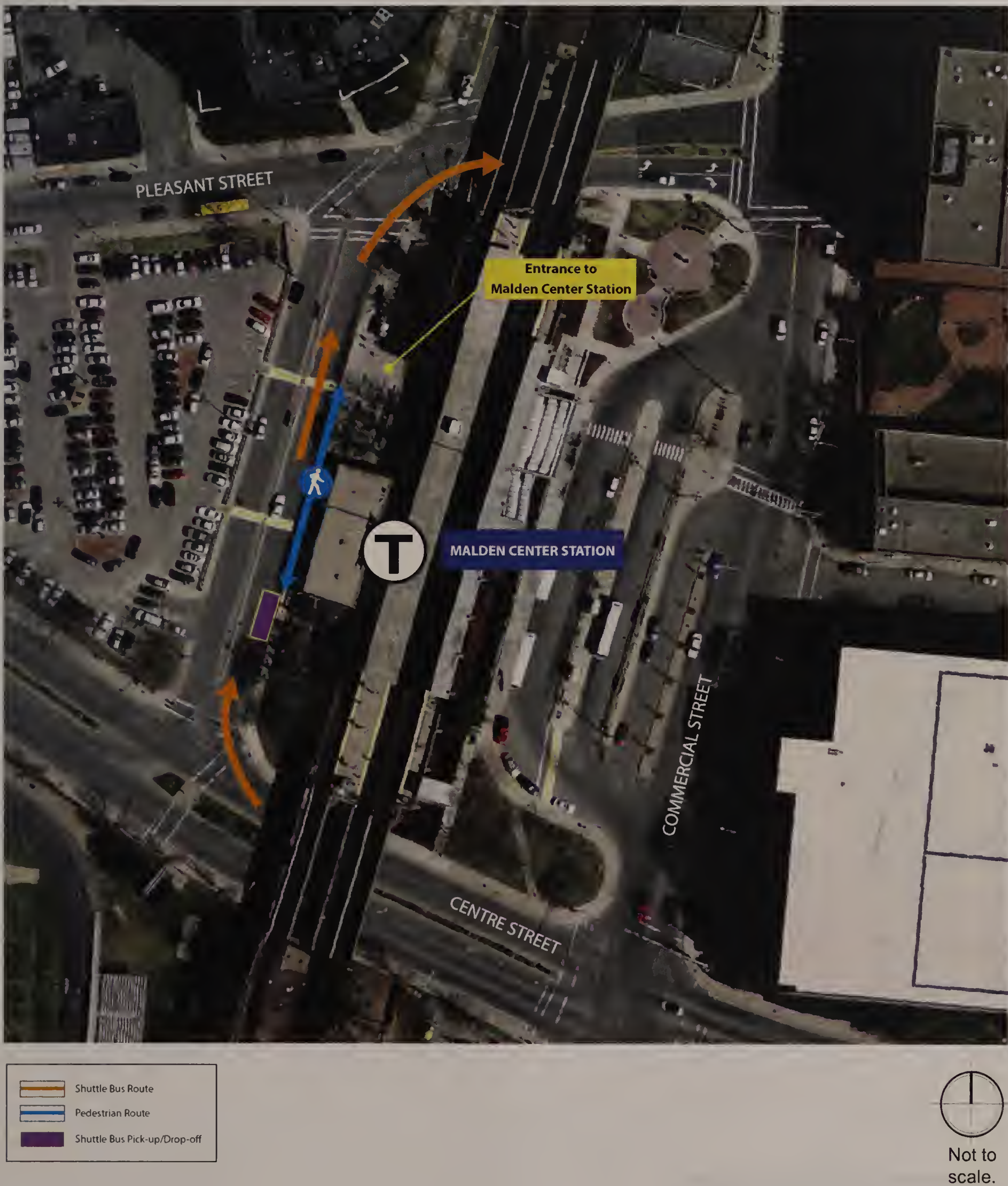

Figure 4-83
Shuttle Bus and Pedestrian Routes, Malden Center Station, Malden
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-84A
Santilli Circle Conceptual Design
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-84B
Santilli Circle Conceptual Design, 80 Scale
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-84C
Santilli Circle Conceptual Design, 80 Scale
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-84D
Santilli Circle Conceptual Design, 80 Scale
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-85
Build (2023) Mitigated Friday p.m. Peak Hour Traffic Volumes, Santilli Circle, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-86
Build (2023) Mitigated Saturday Afternoon Peak Hour Traffic Volumes, Santilli Circle, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Wynn Everett
Everett, Massachusetts

Figure 4-87
Comparison of Existing and Future Friday p.m. Traffic Volumes, Santilli Circle, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-88
Comparison of Existing and Future Saturday Afternoon Traffic Volumes, Santilli Circle, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

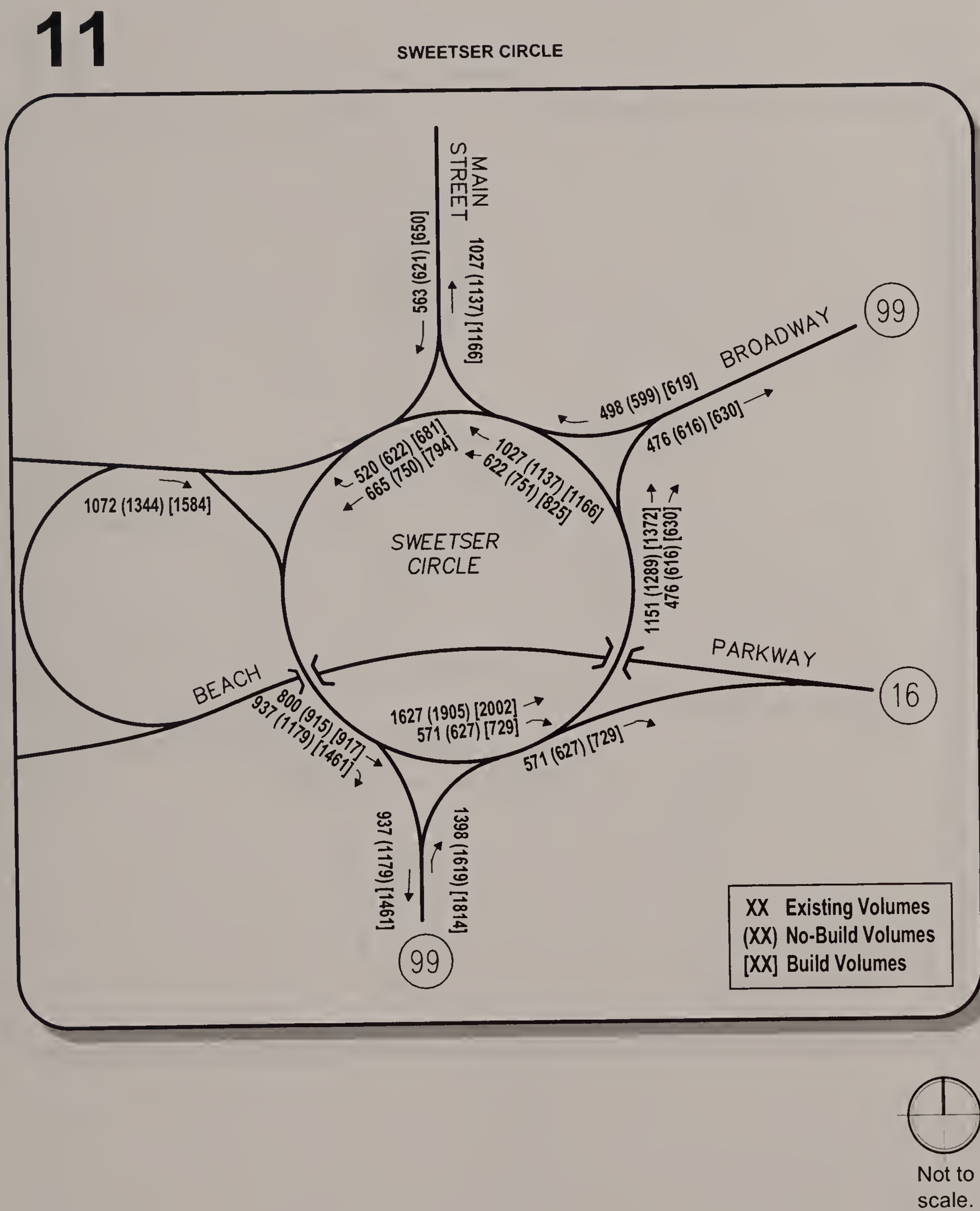

Figure 4-89
Comparison of Existing and Future Friday p.m. Traffic Volumes, Sweetser Circle, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

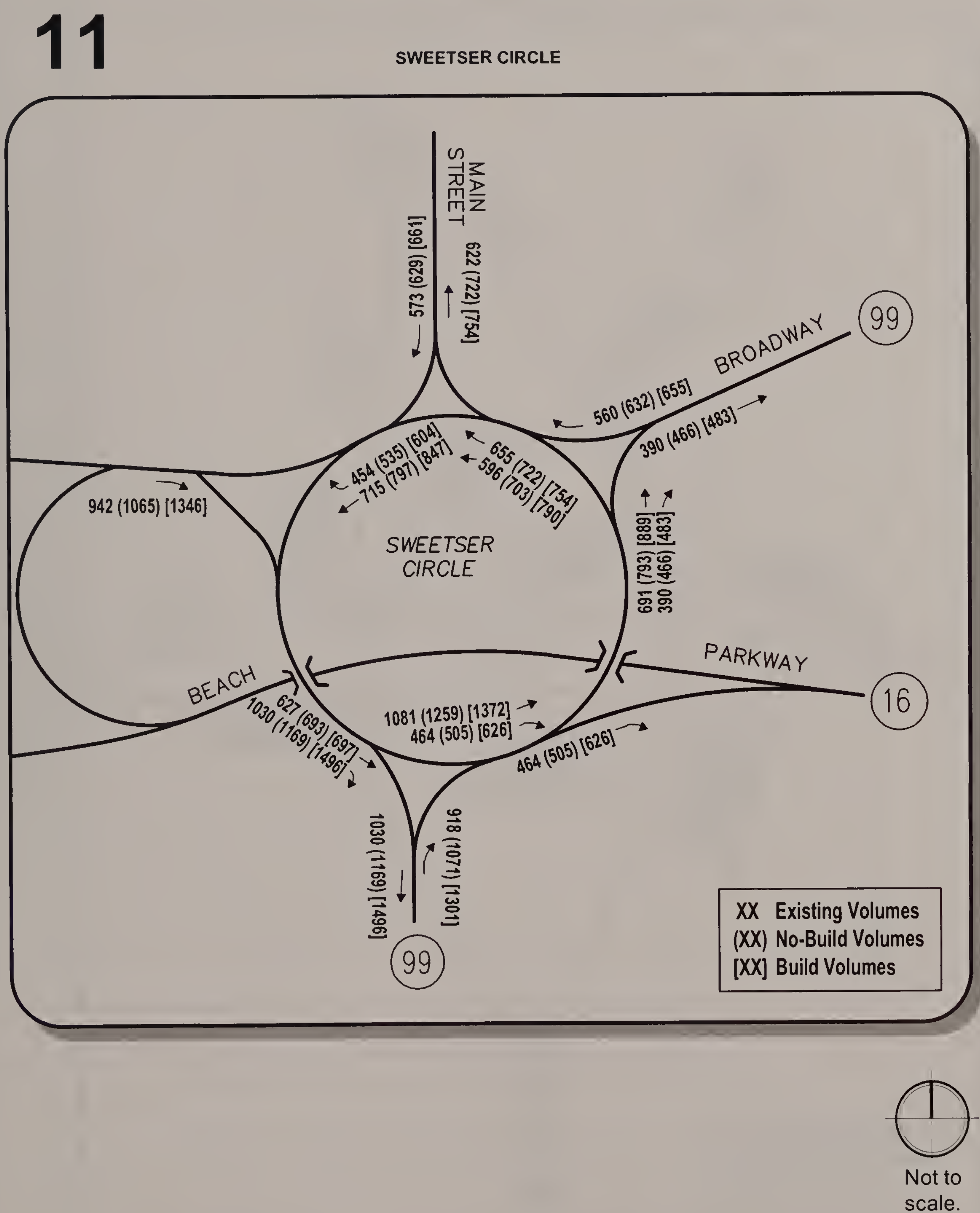

Figure 4-90
Comparison of Existing and Future Saturday Afternoon Traffic Volumes, Sweetser Circle, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

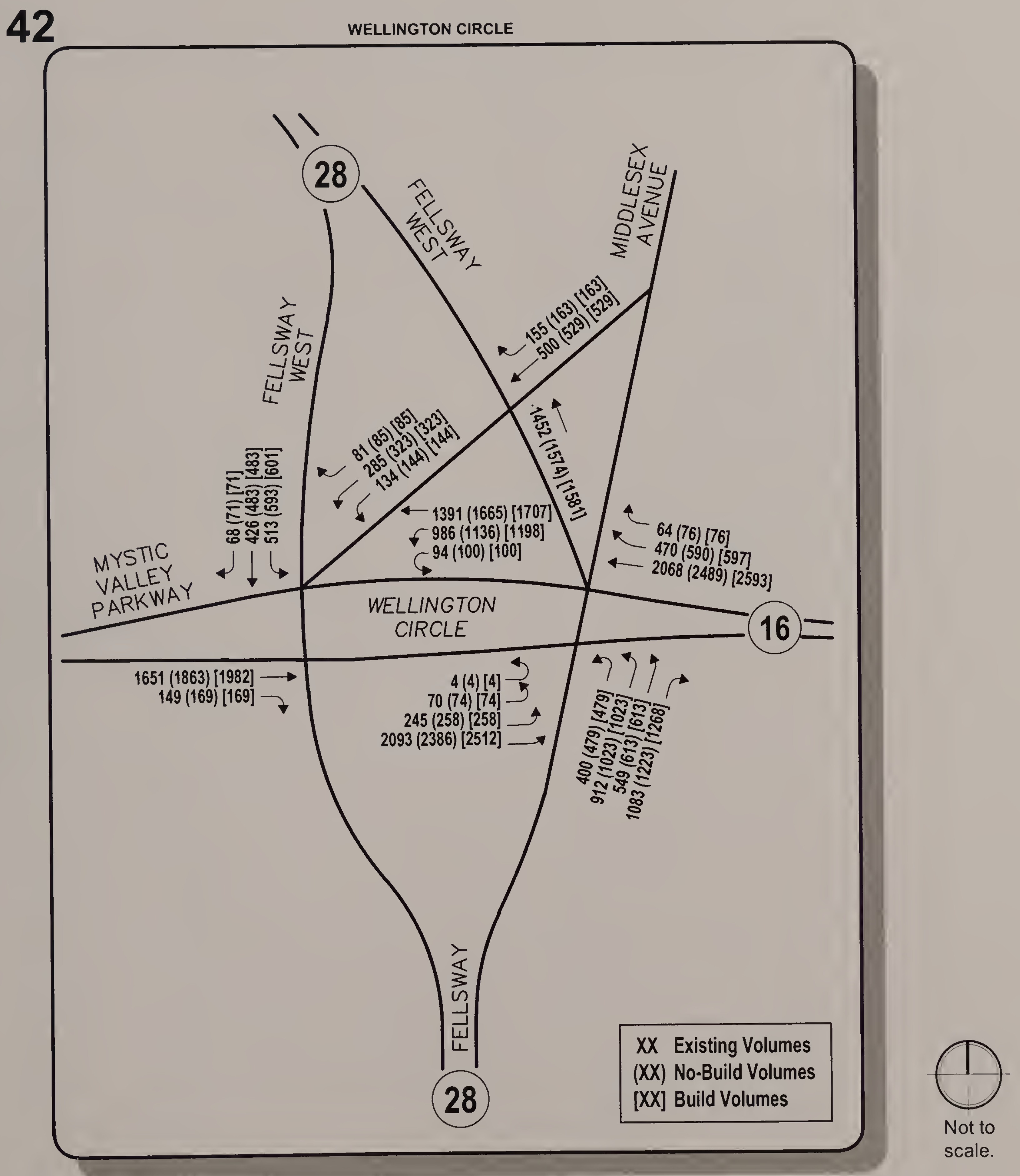

Figure 4-91
Comparison of Existing and Future Friday p.m. Traffic Volumes, Wellington Circle, Medford
Source: Howard/Stein-Hudson Associates, Inc., 2013

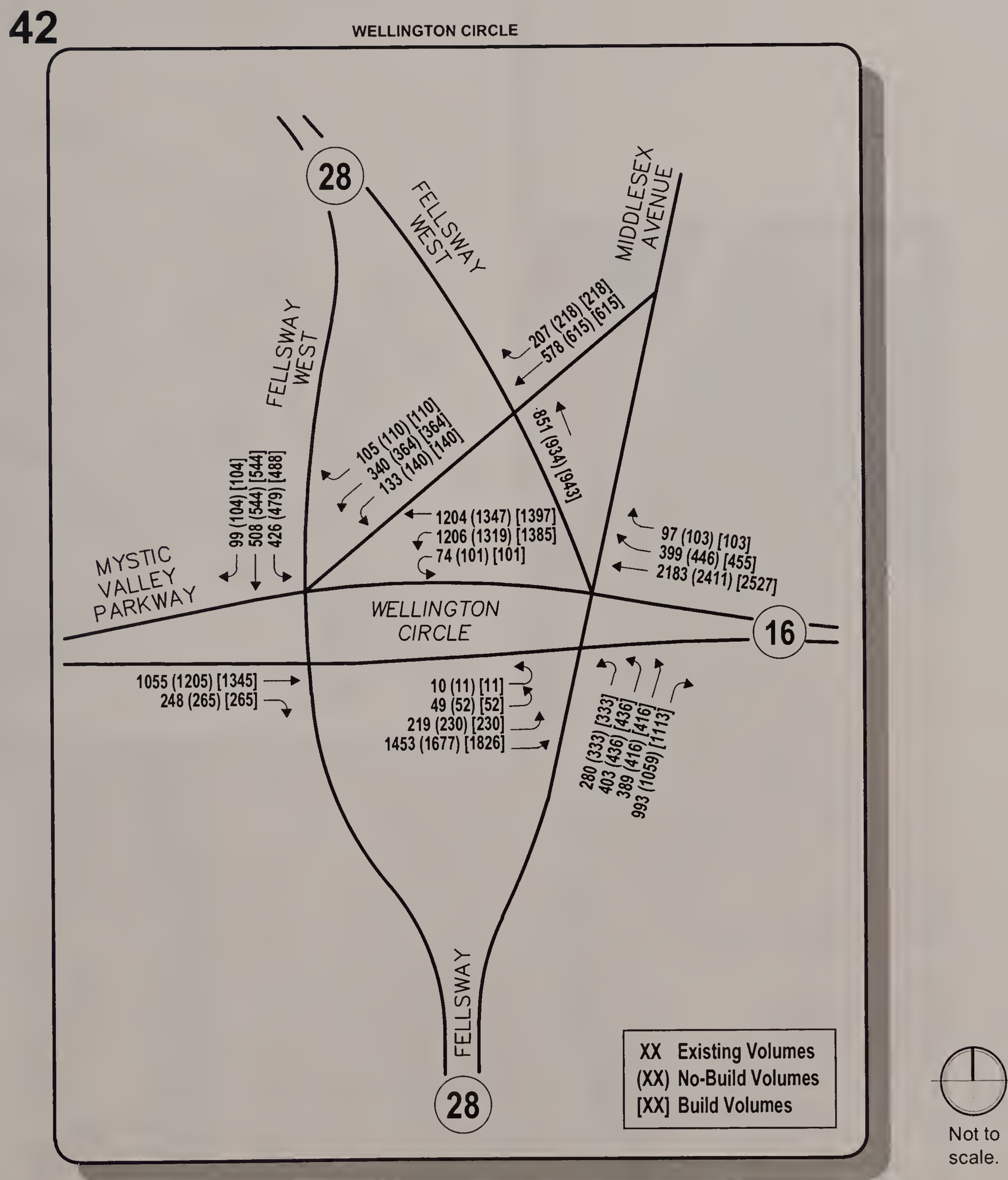

Figure 4-92
Comparison of Existing and Future Saturday Afternoon Traffic Volumes, Wellington Circle, Medford
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-93
Comparison of Future Friday p.m. Traffic Volumes, Sullivan Square, Boston
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-94
Comparison of Future Saturday Afternoon Traffic Volumes, Sullivan Square, Boston
Source: Howard/Stein-Hudson Associates, Inc., 2013

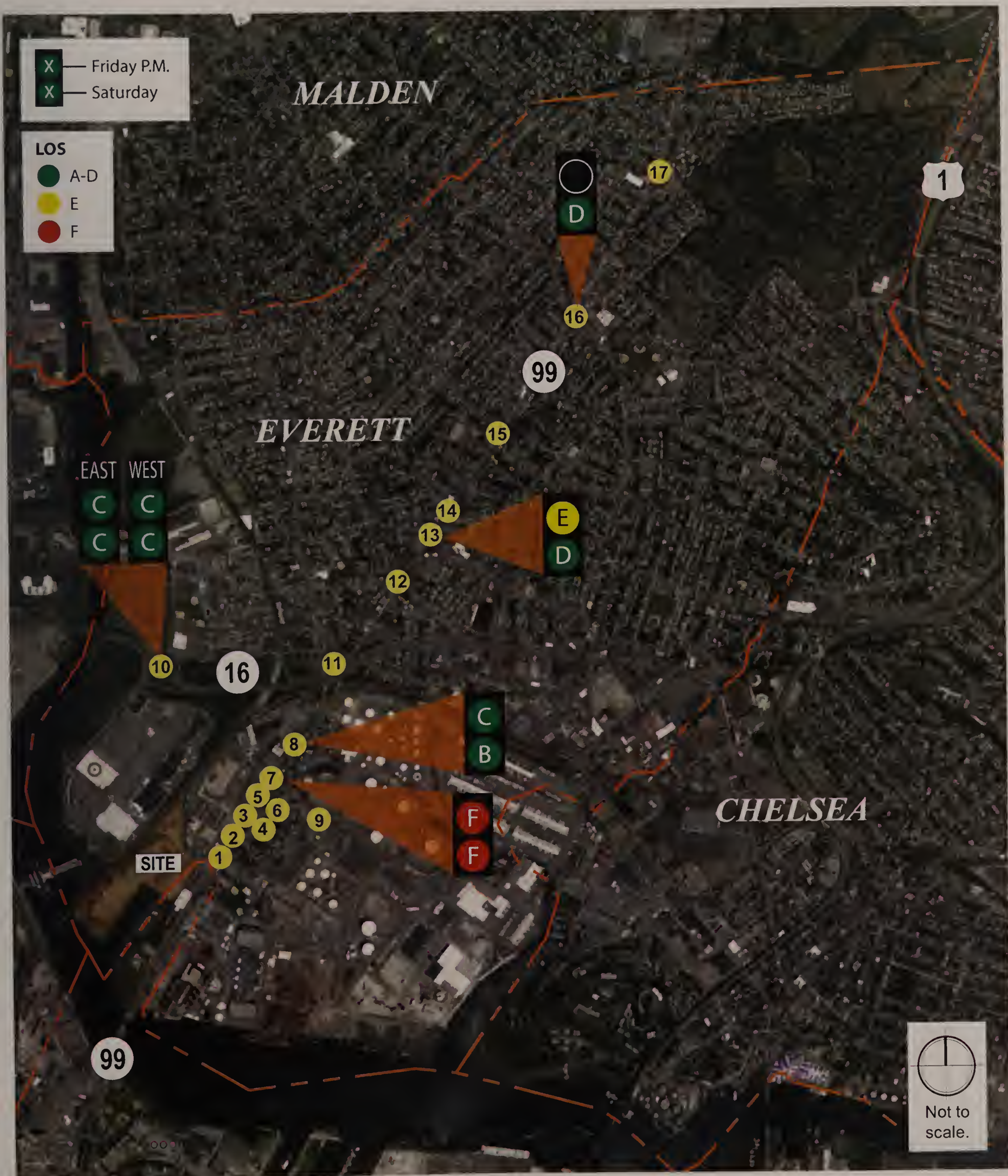

Figure 4-95
Build (2023) Mitigated Peak Hour Capacity Analysis Summary, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-96
Build (2023) Mitigated Peak Hour Capacity Analysis Summary, Chelsea and Revere
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-97
Build "Real" Mitigated (2023) Friday p.m. Peak Hour Volumes, Santilli Circle, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-98
Build "Real" (2023) Mitigated Friday p.m. Peak Hour Capacity Analysis Summary, Selected Lower Broadway (Route 99) Intersections, Everett and Boston
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 4-99
Build "Real" Mitigated (2023) Friday p.m. Peak Hour Capacity Analysis Summary, Santilli Circle, Everett
Source: Howard/Stein-Hudson Associates, Inc., 2013

Chapter 5

AIR QUALITY

CHAPTER 5: AIR QUALITY

5.1 AIR QUALITY

The air quality impacts from the operation of the Project subsequent to the completion of construction will be limited to emissions from combustion of clean-burning natural gas for cogeneration, supplemental heating and hot water. All fuel burning equipment for the Project will be registered with MassDEP through the self-certification process of the Environmental Results Program (ERP), see 310 CMR 7.26. This applies to the 1-MW microturbine for the cogeneration plant, all emergency generators, which individually will be below 1 MW in size, and heating boilers, which individually will not exceed 40 MMBtu/hour heat input in size. Fuel burning equipment registered through the ERP does not require a pre-construction air permit from MassDEP.

Increased vehicular traffic volume will slightly increase regional emissions of motor vehicle air pollutants. A mesoscale air quality analysis is included in this Appendix E, and is summarized in Section 5.1.1 below. As discussed in Chapter Four, Transportation, Transportation Demand Management (TDM) strategies are proposed to minimize the increase in motor vehicle emissions.

5.1.1 MESOSCALE AIR QUALITY ANALYSIS RESULTS

A mesoscale air quality analysis was performed for the Project. Mesoscale emissions of volatile organic compounds (VOC) and nitrogen oxides (NOx) were calculated for four scenarios: 2013 Existing, 2023 No-Build, 2023 Build, and 2023 Build with Mitigation. This analysis uses the US Environmental Protection Agency (EPA) MOBILE6.2 Mobile Source Emission Factor Model and follows a protocol that was approved by MassDEP.

The vehicle miles traveled (VMT) for each roadway segment was calculated by multiplying the length of each road segment by the average daily traffic volume on the segment. Average daily (24-hour average) traffic volumes (ADTs) were calculated based on traffic data provided by Howard/Stein-Hudson (HSH). The VOC and NOx emissions for each roadway segment were calculated by multiplying the VMT (miles per day) by the MOBILE6.2 predicted VOC and NOx emission factors in grams per mile. The MOBILE6.2 model was run using input files provided by MassDEP for 2013 and 2023. These emission factors were calculated for the warm summertime temperatures, which correspond with the peak ozone season. MOBILE6.2 predicted VOC and NOx emission factors vary with vehicle speed. Average speeds were assumed to range from 15 to 30 mph within the roadway network.

The 2013 Existing VOC mesoscale emissions over the study area are 27.47 kg/day. The mesoscale emissions of VOC for the 2023 No-Build case are predicted to be 23.93 kg/day. This is a 12.9% decrease from the existing mesoscale VOC emissions. The mesoscale emissions of VOC for the 2023 Build case are predicted to be 26.97 kg/day. This is a 1.8% decrease from the existing mesoscale VOC emissions. The 2013 Existing NOx mesoscale emissions over the study area are 49.93 kg/day. The mesoscale emissions of NOx for the 2023 No-Build case are predicted to be 22.49 kg/day. This is a 55.0% decrease from the existing mesoscale NOx emissions. The mesoscale emissions of NOx for the 2023 Build case are predicted to be 25.37 kg/day. This is a 49.2% decrease from the existing mesoscale NOx emissions. Further details are provided in the tables and text in Appendix E.

The US EPA has established more strict emission standards for new motor vehicles than older vehicles. The MOBILE6.2 model predicts motor vehicle VOC and NOx emissions to decrease between 2013 and 2023, as new, lower polluting vehicles replace older vehicles on the roadways. The MOBILE6.2 model predicts further declines in VOC and NOx motor vehicle emission rates after 2023. These national control programs are the most effective mitigation measures for ozone, a regional air pollutant. While each individual project needs to pursue all reasonable mitigation measures for motor vehicle emissions, the net effect of a single project is very small.

The mesoscale analysis predicts that the emissions of VOC and NOx in the Project Study Area for the 2023 Build case will be 26.97 kg/day and 35.0 kg/day, respectively, both approximately 13% higher than the emissions for the 2023 No-Build case. Compared to existing countywide VOC NOx emissions, this represents an increase of approximately 0.002%.

The Project will mitigate potential air quality impacts by committing to a number of TDM strategies and roadway/traffic signal improvements for the project, which are described in Chapter Four, Transportation. Incentives will be provided to help increase the effectiveness of the voluntary TDM measures. The TDM measures will improve traffic operations, reduce project generated vehicle trips, and reduce project-related motor vehicle air pollutant emissions by approximately 5.0 percent. These mitigation measures will result in small reductions in VOC and NOx emissions compared to the 2023 Build case. The proposed TDM measures and roadway/traffic signal improvements constitute all reasonable and feasible traffic mitigation measures for a project that is well-served by public transportation.

Chapter 6

Greenhouse Gas and Sustainable Development

CHAPTER 6: GREENHOUSE GAS AND SUSTAINABLE DEVELOPMENT

6.1 GREENHOUSE GAS ANALYSIS

A revised greenhouse gas (GHG) emissions analysis was performed for the Project, consistent with the EOEEA "Greenhouse Gas Emissions Policy and Protocol" (May 5, 2010). The Project consists of approximately 1.3 million square feet (sf) of inhabited space, including a high-rise hotel, a casino, meeting space, food and beverage, and retail uses. There will be a parking structure for patrons and off-site parking for employees. This GHG analysis conforms to the EOEEA Policy, and the proposed Project is consistent with the Commonwealth's Sustainable Development Principles.

6.1.1 REVISIONS SINCE THE EENF

The revisions to the GHG analysis since the EENF are as follows:

- The size and height of the building have changed, and the eQUEST energy modeling and energy mitigation analysis has been updated to reflect the current DEIR Program.
- Interior light power density has been reduced 20% below Code.
- Three renewable energy measures have been adopted: (1) a photo-voltaic (PV) system on the podium building roof, providing approximately 3% of the Project's annual electrical consumption; (2) purchase of approximately 7% of the Project's annual electrical consumption from local service providers of Green Power; and (3) a cogeneration plant using a nominal 1-MW microturbine, providing approximately 20% of the Project's annual electrical consumption.

The technical and cost feasibility of two alternative energy efficiency measures has been studied. These are: (1) on-site anaerobic digestion for recycled food waste; and (2) ground or water-source heat pumps for the Project.

6.1.2 SUMMARY OF PROPOSED ENERGY EFFICIENCY MEASURES

The GHG Policy requires a project to quantify CO_2 emissions and identify measures to avoid, minimize, or mitigate such emissions, quantifying the effect of proposed mitigation in terms of emissions reduction and energy savings. The GHG Emissions Policy and Protocol requires quantification of GHG emissions from three sources:

direct emissions from on-site stationary sources, indirect emissions from energy generated off-site (electricity), and traffic generated by the Project. CO_2 emissions were quantified for: (1) the Base Case corresponding to the 8th Edition of the MA Building Code that includes the 2009 IECC with MA amendments, and (2) the Mitigation Alternative, which includes all energy saving measures. Everett is not a Stretch Code community. To provide creative energy mitigation, the Project has adopted the following Energy Efficiency Measures (EEMs):

- Cool roofs
- Central chiller plant with better efficiency than Code
- Demand Control Ventilation (DCV) for the casino, public entertainment, and retail areas
- Energy Recovery Ventilation (ERV) to reduce chiller energy use
- Building envelopes with roof and window insulation better than Code
- Skylights over the entry atrium and along the retail promenade (daylighting controls will be tied to this extensive system of skylights)
- Lower light power density 20% better than Code
- Low-energy Electronic Gaming Machines (EGMs)
- High efficiency elevators with regenerative VVVF drives and LED lights
- Demand Control Exhaust Ventilation (DCEV) with variable frequency drive (VFD) fans for enclosed parking structures and metal halide lighting for all parking structures
- Kitchen and restaurant refrigeration energy efficiency design to reduce energy use
- Energy-STAR appliances
- Enhanced building commissioning
- Occupancy controls for non-occupied or infrequently occupied spaces

A feasibility study for on-site anaerobic digestion (AD) is provided in the GHG Appendix E, Section 4.4. For both technical and cost reasons it concludes an on-site AD plant is not feasible for the project. The Project will develop a robust food waste (source-separated organics, SSO) recycling program on a facility-wide basis that addresses all food service operations in the casino, hotel and food and beverage outlets. The program will utilize BMPs with dedicated storage for food waste, including some refrigerated storage. The Project will install a food waste macerator-dewatering unit in the largest kitchen to grind and dewater food waste before it is transported off-site. The Project will seek a long-term contract for off-site anaerobic digestion of food waste.

The Project has adopted the following Renewable Energy Measures:

- Photo-voltaic (PV) system on the podium building roof, providing approximately 3% of the Project's annual electrical consumption;
- Purchase of approximately 7% of the Project's annual electrical consumption from local service providers of Green Power; and
- Cogeneration plant using a nominal 1-MW microturbine, providing approximately 20% of the Project's annual electrical consumption (the cogeneration plant is capable of providing 6,307 MWhr/year of on-site electrical generation, supporting 780 tons of absorption cooling, and providing up to 50 percent of the Project's annual heating and hot water needs)

In regard to other specific issues called out by the Certificate, separate lists of EEMs that will be mandated for tenants versus those tenants will be encouraged to adopt are provided in the Tenant Manual in Section 4.5 of Appendix E. All applicable mitigation measures recommended by the EOEEA GHG Policy have been considered in this GHG study and those measures have either been adopted, rejected for stated reasons, or identified for further study as the Project design advances; see Appendix E for details. Emissions from fleet vehicles are included in the mesoscale air quality analysis of VOC, NOx and CO_2 emissions. Additional energy efficiency measures for the parking garage have been adopted, as discussed in the GHG report, Appendix E, page 23. The GHG emissions related to water use and wastewater disposal are included in the GHG study, Appendix E, page 18, Table 4E.

The comprehensive list of EEMs presented above constitute the Mitigation Alternative and will reduce total direct and indirect stationary source energy use by 22.6% and will reduce CO_2 emissions by 25.4% compared to the Base Case. Transportation Demand Management (TDM) measures for the Project will reduce Project-related motor vehicle CO_2 emissions by 5.0%. The net reduction of the Project's total CO_2 emissions (stationary source, plus transportation) for the Mitigation Alternative is 23.0% compared to the Base Case, a weighted average of 25.4% and 5% where the total CO_2 emissions of each component are the weighting factors.

The Proponent has committed to a comprehensive list of energy efficiency measures (EEMs) in the Mitigation Alternative that will reduce overall Project (stationary source) CO_2 emissions by 25.4% compared to the Base Case but retains the flexibility to achieve this GHG emission reduction goal using EEMs to be refined at the time of detailed design.

The Proponent has also committed to the Renewable Energy Measures listed above. The proposed rooftop PV system and the 1-MW microturbine cogeneration plant together are estimated to reduce CO_2 emissions by 662 tons/year, an additional 3% reduction from Base Case CO_2 emissions.

The Proponent will submit a self-certification to the MEPA Office, signed by an appropriate professional, at the completion of the Project that will identify the as-built energy mitigation measures and document the CO_2 emission reductions from the Base Case.

6.2 SUSTAINABLE DEVELOPMENT

The Proponent has a high level corporate commitment to sustainable development and operations that is expressed throughout its worldwide resort holdings. Recognizing that its corporate and private customers value protection of the environment, sustainability is a core corporate value. The Proponent is committed to incorporating sustainability into the Project from its inception through construction and into operations. To achieve this goal, the Project will incorporate the following measures, which are described in more detail in the following sections:

- Design the building to be certifiable under the Green Building Council Leadership in Energy and Environmental Design (LEED) rating of Gold or higher. With the addition of on-site cogeneration and PV, the Project may achieve a Platinum rating.
- Reduce greenhouse gas emissions through a targeted program of measures that will assist the Commonwealth in achieving their goals for GHG reductions by 2020
- Reduced water and electricity consumption from existing code requirements
- Plan for and account for the potential effects of sea level rise by elevating the proposed structures to a level of a minimum of 7.5 [NOTE SEE PG 6-5] feet above the 100 year flood level
- Provide approximately 20% of the Project's annual electrical consumption through the cogeneration plant, 3% from a rooftop PV system, and 7% from purchase of Green Power.

6.2.1 CLIMATE CHANGE AND SEA LEVEL RISE

Climate Change

Climate change is a reality that must be anticipated, particularly in coastal locations. The changing weather patterns, temperature variations, and storm conditions need to be considered in the Project design. The Project will be designed with climate change in mind. The building designs will incorporate state-of-the-art design criteria to account for periods of heavier rainfall, higher peak temperatures during heat waves, and the potential for sea level rise.

In the Boston area, the greatest focus is on floods (rain events and coastal storm surges), severe storms (rain, ice, snow and wind), and temperature extremes (both hot and cold).

In July 2013, the Boston Society of Architects released a detailed study on best practices for climate change adaptation and resilience for existing buildings called Building Resilience in Boston. The following list outlines the study's key points and goals that have been addressed in the conceptual Project design:

- rain gardens and swales
- flood-proof construction
- elevate structures above design flood elevations
- prevent water from infiltrating
- protect all service equipment (HVAC, electrical, fuel, water, sewage)
- install back-water flow values and sump pumps
- protect entrances from snow and ice
- enhance building insulation
- cool/green roofing
- resilient back-up power and systems
- elevators should have backup power sources
- insulate refrigeration equipment
- raise utility hook-ups, mechanical devices, electrical service panel, water heaters, and IT services above potential flood levels
- maintain lighting systems to prevent equipment, building, and roof damage
- resilient HVAC systems

Sea Level Rise

The Proponent recognizes that constructing a building on a waterfront site must take into account the potential for future sea level rise. The recent report by The Boston Harbor Association (TBHA , "Preparing for the Rising Tide,") makes clear the impact of sea level rise on the harbors edge environment. The Project has adopted the most aggressive scenario considered in the report, which is sea level rise of 7.5 feet above current high water (or Elevation 12.35 NAVD88) and will place all habitable floors above this level. The Project will be elevated so that the lowest floor, the retail wing on the peninsula will be elevated to 12.35 feet. The main building, including the hotel and gaming facilities will be elevated even higher to 18.35 feet, well above any potential flood levels.

The Project will be in line with Spaulding Rehabilitation Hospital, which is the only project to date in the Boston Harbor to fully take into account the potential for sea

level rise in the future. Projections for future changes in flood elevations for the 100-year storm event reflect a modest increase for the Project Site.

To prepare for impacts, parking garage entrances and other openings into below-grade spaces will be elevated above this level as well, or sufficiently flood proofed to avoid inundation from coastal storms. The Proponent will consider other measures appropriate during the course of a major storm event during the design of the Project. Due to its protected location upriver from much of the harbor, wind driven waves are not considered to be an important factor in the Project's design.

During the preparation of this document, Draft Flood Insurance Rate maps (FIRM) were released for the adjacent areas of Suffolk County. While new flood levels have not been established for the Project Site the Suffolk County maps are undergoing public review and comment and it is anticipated that based on the draft FIRM, the estimated 100 year flood level on the Project Site may increase by one foot. The Project design is safely above the current 100 year flood levels as well as potential increased levels similar to Suffolk County.

6.2.2 LEED CONSTRUCTION COMMITMENTS

The Project is committed to providing energy efficient building design and enhancing its environmental sustainability. Accordingly, the Project will be designed to comply with the certification standards of the LEED NC 2009 system at the LEED Gold level, and potentially at a higher level. It is still early in the planning process and consideration will be given to advancing the level of LEED certifiability as the Project moves through the design process. A LEED Checklist of proposed sustainability measures is included in Appendix F, LEED Checklist. A total of 67 points have been identified with a potential additional 31 possible points. Based on current analysis, achieving Platinum appears to be possible if credit is taken for the proposed on-site PV system and the cogeneration plant.

Sustainable Sites

The Project has identified 20 potential points in this category. Credits are derived from the redevelopment of a brownfield site for a mixed-use project that has access to a variety of basic services. The Project Site is proximate to three transit stations and the Proponent intends to provide shuttle service between the stations and the Project Site. Further, the Project Site is located along a roadway with existing fixed-route bus service and includes the establishment of a bus stop at the Project Site entrance. In addition, pedestrian and bicycle use will be encouraged with bicycle lanes and paths. These amenities include an extension of the Mystic River Parkway trail system to and within the Project Site, connecting to the pedestrian and bicycle infrastructure along Broadway and Alford Street. Preferential parking will be

provided within the parking garage for car/vanpools, alternative fuel, and low emissions vehicles. In addition, there will be electric vehicle charging stations provided in the parking garage. The Project will incorporate advanced stormwater design to achieve quantity and quality goals.

Water Efficiency

The Project will reduce water use for irrigation to 0% by using rainwater harvesting or gray water reuse. Water use will be reduced by 30% from a Base Case through water conserving technologies.

Energy and Atmosphere

The project will meet the prerequisites and earn 9 points by achieving an energy reduction of 28% from baseline. Credits will also be earned for enhanced commissioning, enhanced refrigerant management, and measurement and verification. Potential credits include the use of on-site renewable energy.

Materials and Resources

As there are no existing buildings on the Project Site to reuse, the Proponent has identified only 4 potential points relating to recycling of construction materials, and use of recycled and regional materials.

Indoor Environmental Quality

The Project will achieve 9 potential points through the use of low-emitting materials, monitoring of outdoor air intake, and system controls.

Innovation and Design Process

The Project will achieve all 6 potential points through exemplary performance in a number of categories and the engagement of LEED AP professionals on the design team.

Regional Priority Credits

The Project has identified 4 potential regional priority credits through on-site renewable energy, heat island effect, stormwater design, and brownfields redevelopment.

6.2.3 LEED OPERATIONAL PRACTICES

In addition to the building design measures listed above, the following practices will be adopted for the building's operation and maintenance:

Site Maintenance

- Establish and adopt a building exterior and hardscape management plan that implements best practices
- Establish and adopt an environmentally conscious integrated pest management (IPM) control plan that includes animal and vegetation pest control IPM best practices
- Survey and monitor regular occupant commuting (such as employee and contractor) practices in an effort to reduce the number of round trips using single occupant, conventionally powered and fueled vehicles
- Promote the use of mass transit, carpools, and low-emitting, fuel efficient or alternative fuel vehicles, as well as bicycles and walking
- Address stormwater quantity control by reducing impervious cover and increasing on-site sediment removal and reduction with the purpose of reducing runoff and contaminants

Water Efficiency

- Eliminate the use of potable water for irrigation by using rainwater harvesting, reuse of gray water, and installing alternatives to natural turf landscaping
- Reduce the consumption of potable water for cooling tower equipment through effective water management, which includes chemical treatment, bleed-off, biological control, and staff training related to tower maintenance

Energy Efficiency

- Establish energy efficiency best management practices for planning, documentation, and opportunity assessment to promote continuity of information; ensure that energy efficient operating strategies are maintained to support system analysis and training
- Develop a systematic process to understand the operation of the Project's major energy using systems, which enable the development of options for optimizing energy performance and a plan to achieve energy savings
- Implement an ongoing program to address minor improvements and identify capital projects to ensure that the Project's major energy using systems are

repaired, operated and maintained effectively to optimize energy performance

- Enable performance measurement of the Project's building automation system allowing information to support accountability, optimization of energy performance, and identification of additional energy investments

Atmosphere

- Maintain zero use of chlorofluorocarbon-based refrigerants in heating, ventilating, and refrigeration base building systems; Support compliance with the Montreal Protocol while minimizing direct contributions to global climate change

Materials & Resources

- Establish and adopt a sustainable purchasing policy to reduce the environmental impacts of materials purchased for use in operations, maintenance, and upgrades of the Project
- Maintain a sustainable purchasing program covering materials with a low cost per item that are regularly used and replaced through the course of business
- Maintain a sustainable purchasing program covering electric or electronic items that are at a higher cost per unit and are replaced infrequently and/or are purchased under a capital program outlay
- Establish and adopt a solid waste management policy to facilitate the reduction of waste generated by the Project's regular occupants and guests that is hauled to and disposed of in landfills
- Establish a baseline using the results of a waste audit and ongoing waste diversion vendor reports to identify opportunities for increased recycling and diversion
- Maintain a waste reduction and recycling program that addresses materials with a low per unit cost that are regularly used and replaced through the course of business: cardboard, paper products, printer and copier toner cartridges, glass, plastics, metals, and food waste
- Maintain a waste reduction and recycling program that addresses durable goods that are replaced infrequently and/or may require a capital program outlay: office equipment such as computers, monitors, copiers, printers,

scanners and fax machines; appliances, cleaning equipment, audio visual equipment, etc.

Indoor Environmental Quality

- Establish minimum indoor air-quality performance to enhance indoor air quality in the Project and prohibit tobacco smoking in the building; Maintain each outside air intake, air supply fan, and/or ventilation distribution system to supply at least the outdoor air ventilation rate required by ASHRAE standard 62.1 Ventilation Rate Procedure under all normal operating conditions

- Develop and adopt a green cleaning policy for the Project and Project Site addressing the following:

    - Establish and adopt an indoor air-quality management program to prevent the development of indoor air-quality problems in the Project, correcting indoor air quality problems when they occur, and maintaining the well being of regular occupants and guests;

    - Install permanent monitoring systems that provide feedback on demand regarding ventilation system performance to ensure that ventilation systems maintain minimum outdoor and airflow rates under all operating conditions;

    - Establish and adopt an indoor air-quality management plan for facility additions and alterations to prevent any issues resulting from construction or renovation projects and help sustain the comfort and well being of construction workers, regular occupants, and guests;

    - Survey and monitor at least 30% of regular occupants' comments related to thermal comfort, acoustics, indoor air quality, lighting levels, and the Project's cleanliness to identify and correct any issues;

    - Provide a high level of lighting system control to at least 50% of regular individual occupants and groups in multi-occupant spaces to promote productivity and comfort;

    - Track and optimize systems that regulate indoor comfort and conditions such as air temperature, humidity, air speed, and radiant temperature to meet desired comfort criteria as determined by ASHRAE Standard 55-2004;

- Provide regular occupants and guests with a connection between indoor spaces and the outdoors through the introduction of daylight and views into regularly occupied areas of the Project;
- Reduce exposure of regular occupants and guests to potentially hazardous chemical, biological, and particulate contaminants through a high performance green cleaning program;
- Implement a program for the use of janitorial equipment that reduces building contaminants and minimizes environmental impact.

Chapter 7

Air Space and Aviation

CHAPTER 7: AIR SPACE AND AVIATION

7.1 OVERVIEW OF AIRSPACE ANALYSIS

An Aeronautical Impact Statement (AIS) for the Project has been prepared to evaluate the potential for aviation impact to the Boston Logan International Airport ("Logan Airport"). This study, which is included as Appendix G, addresses the complete range of operations at Logan Airport, including instrument and visual approach procedures, departure procedures, and potential for electromagnetic interference with air navigation facilities. This chapter briefly summarizes the results of that analysis. The full AIS will be filed with the applicable State and Federal aviation agencies for their review. The Project will continue consultation with the Massachusetts Port Authority (Massport) and the MassDOT Aeronautics Division regarding project design and features relative to any potential issues regarding air navigation.

Based on the conclusions of the AIS, while State and Federal airspace reviews are required, the Project is not expected to adversely impact any aviation interests or operations. In particular, there would be no impact on instrument flight procedures, no material electromagnetic interference with Logan Airport radar service, and no impact to any Logan Airport operations.

7.2 APPLICABLE REGULATORY REQUIREMENTS

7.2.1 NOTICE TO THE FAA

Because the Project's hotel building exceeds 200 feet in height above ground level (AGL), notice to the Federal Aviation Administration (FAA) is required. Title 14 CFR Part 77 defines the requirements for such FAA submission and analysis. Any structure that exceeds Title 14 CFR Part 77.9(a), "200 feet above ground level" at the construction site or penetrates a 100:1 slope from any qualified airport runway requires notice to the FAA. The Project both exceeds 200 feet above ground level and exceeds the 100:1 slope from the nearest Logan Airport runway (15R). Accordingly, notice to the FAA's Obstruction Evaluation/Airport Airspace Analysis Group will be provided via FAA Form 7460-1 and through the program web site.

Construction cranes are expected to exceed the proposed height of the Project's hotel tower, and will therefore need a separate notice to and aeronautical study by the FAA, which will coordinate with the BOS ATCT.

7.2.2 NOTICE TO MASSDOT AERONAUTICS DIVISION

Notice to the Massachusetts Aeronautics Division, formerly known as the Massachusetts Aeronautics Commission (MAC), is required using MAC Form E-10, Aeronautics Commission Request for Airspace Review, pursuant to 780 CMR 111.7. The Project will complete and submit this notification and will coordinate with the Aeronautics Division regarding further Project planning.

7.3 ANALYSIS OF STATE AND FEDERAL AIRSPACE ISSUES

7.3.1 STATE AIRSPACE ISSUES

Massachusetts General Law Chapter 90, Section 35B prevents construction of any structure greater than 150 feet above the runway within a rectangle area lying 1,500 feet on either side of the extended centerline of a runway or landing strip of an airport approved by the Commission for a distance of two miles from the end of the runway. The Project is 2.856 miles along-track distance from the nearest runway at BOS, outside of any MGL aviation surfaces assigned to Logan Airport. Therefore, the Project is not subject to the requirements of this law. See Figure 7-1, MGL Chapter 90, Section 35B Obstruction Clearance Surface for Logan Airport.

MAC has requested that the Proponent continue to consult with it and MassPort concerning sunlight reflection from the Project's planned roof mounted solar panels. The rooftop solar panels are expected to be oriented to the south. Since the Project is also located south of the instrument approach course centerlines at BOS, reflections toward the relevant aircraft would not occur during the critical landing or departing phase of flights from these instrument approach courses. While Runway 14 approaches and Runway 32 departures at Logan Airport could theoretically experience reflections, these specific operations are not permitted. The Project will continue to coordinate with Massport and the Aeronautics Division as building design proceeds to ensure careful consideration of any concerns involving reflective building materials or features.

7.3.2 ISSUES UNDER FAA REGULATION PART 77

The Project's hotel tower will penetrate the FAA's Title 14 CFR Part 77.17(a)(2) Obstruction Surface. This obstruction surface dimension is commonly penetrated around most airports; most of the existing buildings in Boston penetrate this surface with respect to Logan Airport. The height of this surface at a distance between 3 to 4 nautical miles from Logan Airport ranges from 220 feet AMSL to 320 feet AMSL. See Figure 7-2, Title 14 CFR Part 77 Obstruction Surface for Logan Airport.

Penetration of this surface is typically mitigated with aviation obstruction lighting. Obstruction lighting must be in accordance with FAA Advisory Circular 70/7460-

1K, Change 2 (or latest version). The recommended obstruction lighting is Dual Medium Intensity Flashing Lights, a system consisting of red lights for nighttime and medium intensity flashing white lights for daytime and twilight. Project design development will incorporate lighting features compliant with these requirements.

The AIS also indicates that some "shielding" of the Logan Airport radar signal will occur. That is, the Project's hotel tower structure will obscure radar detection of certain objects within a very narrow portion of the Logan Airport Airspace. However, based upon shielding calculations and actual flight path data included in Appendix G, no fixed wing aircraft will be affected by the radar shadow associated with the Project. A small number of VFR helicopter traffic below 560 feet AMSL will be in the building's radar shadow for less than two seconds. Considering the rotation rate of the radar, this may not even be noticeable by Air Traffic Control. This very limited potential radar shadow is not expected to adversely affect air navigation. Studies for the AIS have also indicated that if building reflections were to create extra radar targets due to the reflected radar signals, the FAA equipment would be able to filter out these false targets. In addition, analysis has indicated that the Project will not create impacts to FAA microwave data paths, Air/Ground communication or air navigation equipment.

7.1.1 LOGAN AIRPORT OPERATIONS

The Project will not require any changes to current or future VFR or IFR operations at Logan Airport. Arrival and departure procedures will be unaffected by the Project.

Airport proximity to building heights is a potential concern if an aircraft has engine failure on take-off, an occurrence referred to as One Engine Inoperative (OEI). This is, by definition, an unpredictable event that could occur anytime. Analysis was performed of the Project's height with respect to Logan Airport Runway 15R/33L, which is the only allowed departure runway with its extended centerline close to the Project Site. Specifically, the extended centerline of this runway is 4431 feet abeam from the Project Site. At this distance the OEI procedures for Runway 33L are unaffected. See Figure 7-3, FAA Advisory Circular 120-91, Airport Obstacle Analysis. In addition, the initial climb-out airport obstacle analysis for a Runway 33L departure does not indicate a problem with any One Engine Inoperative procedure.

The AIS further indicates that no change in minimums will result from this Project and no change to the Boston Helicopter Routes will be necessary. However, some temporary restrictions to Runway 33L departure may be applicable during the construction period, depending upon the height of the construction crane(s). The Project will continue to coordinate with Massport and Logan Airport to address appropriate marking and lighting of temporary construction cranes in accordance

with applicable FAA requirements, lowering of cranes when not in use, and if needed, appropriate notices to airmen (NOTAMS). Please refer to the detailed Aeronautical Impact Statement (AIS), Appendix G, for further information.

Figure 7-1
MGL Chapter 90, Section 35B Obstruction Clearance Surface for Logan Airport
Source: *Federal Airways & Airspace, 2013*

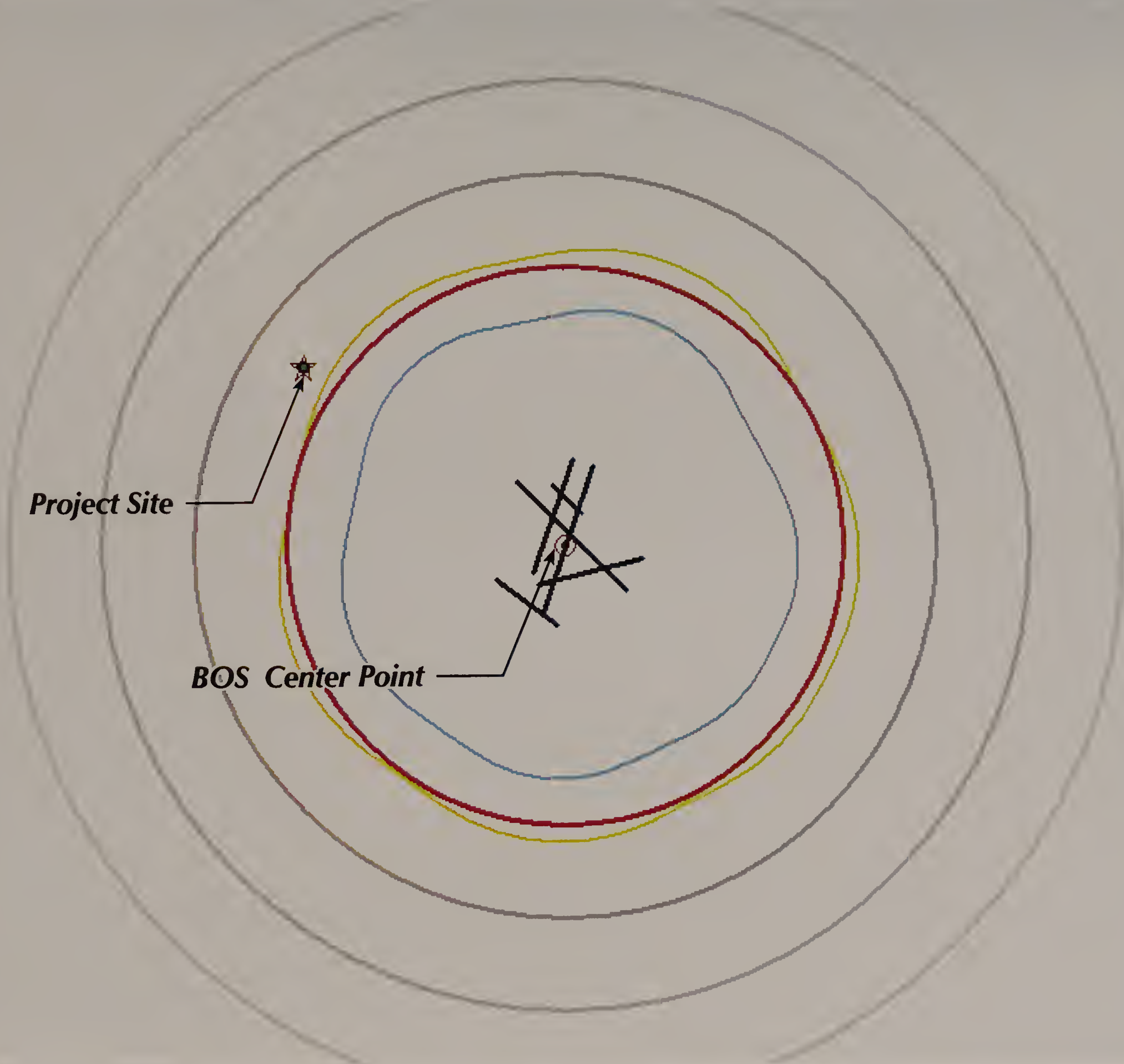

Figure 7-2
Title 14 CFR Part 77 Obstruction Surface for Logan Airport
Source: *Federal Airways & Airspace, 2013*

Wynn Everett
Everett, Massachusetts

Figure 7-3
FAA Advisory Circular 121-91, Airport Obstacle Analysis
Source: *Federal Airways & Airspace, 2013*

Chapter 8

WETLANDS AND WATERWAYS

CHAPTER 8: WETLANDS AND WATERWAYS

8.1 WETLAND RESOURCES

8.1.1 EXISTING CONDITIONS

The Project Site is located within and adjacent to the tidally-affected portions of the Mystic River below the Amelia Earhart Dam. Various coastal resources located on the Project Site are regulated under state, federal, and local laws and programs. The Project Site was examined and evaluated by GZA environmental scientist/biologists between April and August 2013. This work included an evaluation of on-site conditions including vegetation, fauna, and habitat characteristics within the shoreline, intertidal, and subtidal areas. The delineation of current Project Site characteristics allowed the further characterization of the Project Site with respect to the types of regulatory resources present.

Based on the definitions provided in the Massachusetts Wetlands Protection Act (WPA; 310 CMR 10.21 through 10.37), the following Resource Areas are present within the Project Site:

- Land Under the Ocean
- Coastal Beach and Tidal Flats
- Coastal Bank
- Land Containing Shellfish
- Salt Marsh
- Riverfront
- Land Subject to Coastal Storm Flowage

The Project Site also includes a regulated Buffer Zone which, while not a Resource Area, is a protected zone extending 100 feet inland from the Coastal Bank resource area. The WPA is administered by MassDEP and the local conservation commissions. These resource areas are geographically depicted on Figure 8-1, Coastal Resource Areas and Flood Zones.

Federal jurisdictional areas, defined as "Waters of the United States," are entirely contained within the state's resource area boundaries. The landward jurisdictional limit is the highest annual tide line in tidal waters. As a federal jurisdictional area, this resource is not directly relevant to this MEPA documentation; however, this definition of regulated area is relevant to permitting under Section 10 of the Rivers and Harbors Act and Section 404 of the Federal Clean Water Act, as administered by the Army Corps of Engineers (USACE).

The entire Project Site is within the Coastal Zone, as regulated under the Federal Coastal Zone Management Act and implemented by the Massachusetts Office of Coastal Zone Management (CZM; 301 CMR 21.00). This regulatory area is discussed under Section 8.3.

The Project Site is also comprised in part of state-regulated flowed tidelands and filled (formerly flowed) tidelands as regulated under Chapter 91 (310 CMR 9.00). This resource type is discussed in Section 8.2.

There are also wetland resources in the area of the off-site improvement areas, specifically in association with:

- the traffic improvements at Santilli Circle; and
- the harborwalk connection extending to Mystic River Reservation to the north of the Project Site.

These areas extend upgradient of the Amelia Earhart Dam and are freshwater wetland resources, including:

- Bordering Vegetated Wetland
- Bank
- Land Under Water
- Riverfront Area

8.1.2 COASTAL WETLAND RESOURCE AREAS AT THE PROJECT SITE

Each of the applicable Resource Areas is listed below in Table 8-1, Regulated Coastal Wetland Resources in the Project Site, depicted in Figure 8-1, Coastal Resource Areas and Flood Zones, and is further described below.

Table 8-1, Regulated Coastal Wetland Resources in the Project Site

Resource Area Type	Description of Specific Area	Regulatory Authority
Land Under the Ocean	Mystic River area below Mean Low Water	MA Wetlands Protection Act (310 CMR 10.00), MassDEP
Coastal Beaches and Tidal Flats	Marginal areas seaward of seawalls and Coastal Bank (within Land Subject to Tidal Action)	MA Wetlands Protection Act (310 CMR 10.00), MassDEP
Land Containing Shellfish	Land Under Ocean and some areas of Land Subject to Tidal Action. Entire Project Site is within zone "prohibited" as a shellfish growing/harvesting area.	MA Wetlands Protection Act (310 CMR 10.00), MassDEP

Resource Area Type	Description Of Specific Area	Regulatory Authority
Coastal Bank	Seaward facing side of any elevated non-dune landform at edge of other regulated Coastal Resource	MA Wetlands Protection Act (310 CMR 10.00), MassDEP
Land Subject To Coastal Storm Flowage	Upland Areas above MHW up to 100-Year FEMA flood boundary elevation	MA Wetlands Protection Act (310 CMR 10.00), MassDEP
Salt Marsh	Small area of *Spartina alterniflora*	MA Wetlands Protection Act (310 CMR 10.00), MassDEP
Riverfront Area	Riparian area extending 25 feet inland from the MHW Line	MA Wetlands Protection Act (310 CMR 10.00), MassDEP
Buffer Zone	Upland Areas (100 ft shoreward from Coastal Bank for MA WPA)	MA Wetlands Protection Act (310 CMR 10.00), MassDEP
Waters Of The US / Navigable Waters Of The US	Areas below Highest Annual Tide Line	Fed. Clean Water Act, Section 404; Federal Rivers & Harbors Act, Section 10. Army Corps of Engineers New England District
Coastal Zone	Entire Project Site is within Coastal Zone	Fed. Coastal Zone Management Act as implemented by CZM (301 CMR 21.00)

Land Under The Ocean

Land Under the Ocean is defined in 310 CMR 10.25(2) as:

> *Land extending from the mean low water line seaward to the boundary of the municipality's jurisdiction and includes land under estuaries.*

The marine portion of the Project Site is located within a tidal reach of the Mystic River below Mean Low Water (MLW), which is identified as elevation -5.21 feet NAVD88 at the Project Site and immediately abuts upgradient Tidal Flats, Coastal Beach, and Coastal Bank.

Coastal Beaches and Tidal Flats

Coastal Beach is defined in 310 CMR 10.27(2) as:

> *unconsolidated sediment subject to wave, tidal and coastal storm action which forms the gently sloping shore of a body of salt water and includes Tidal Flats. Coastal Beaches extend from the mean low water line landward to the dune line, coastal bank line, or seaward edge of existing man-made structures, when these structures replace one of the above lines, whichever is closest to the ocean.*

A Tidal Flat is a part of a Coastal Beach and is defined as:

> *any nearly level part of a Coastal Beach which usually extends from the mean low water line landward to the more steeply sloping face of the Coastal Beach or which may be separated from the beach by land under the ocean.*

The regulated Coastal Beach areas within the Project Site are characterized by muddy and sandy sediment, with increasingly coarse material (including small stone and brick fill) below Mean High Water ("MHW"). MHW is at elevation 4.35 ft NAVD88. The landward edge of the Coastal Beach (i.e., the Coastal Bank line) at the Project Site is defined by the seaward edge of the existing man-made structures (i.e., failing and aging seawalls and fill/rip-rap stabilized slopes with some vegetation growth) that form the shoreline for the upland portion of the Project Site. There is approximately 400 linear feet of Coastal Beach occurring at the base of the aging seawalls and about 1,200 linear feet of Coastal Beach along the Project Site west of the seawalls.

All areas of the Coastal Beach are also within areas of Land Subject to Tidal Action, which is defined as land subject to the periodic rise and fall of a coastal water body, including spring tides. Land Subject to Tidal Action is included with Coastal Beaches in the WPA Regulations (310 CMR 10.27). There are no separate performance standards for Land Subject to Tidal Action.

Land Containing Shellfish

Another coastal resource area present in the area is Land Containing Shellfish. As defined in 310 CMR 10.34(2), this resource is:

> *land under the ocean, tidal flats, rocky intertidal shores, salt marshes and land under salt ponds when any such land contains shellfish.*

Land Containing Shellfish potentially occupies the same physical areas as Land Under the Ocean, as well as Coastal Beach and Land Subject to Tidal Action. Shellfish Growing Area Designations by the Massachusetts Department of Marine Fisheries (DMF, September 2009) indicate that all of the Mystic River and associated embayments and coves are currently classed as prohibited as a shellfish growing area, which means the area is closed to the harvesting of shellfish. However, as part of its review of the EENF for this project, the DMF noted the presence of soft shell clam shells, *Mya arenarea,* in the mud flats on the easterly side of the cove, opposite the Project Site (see review letter dated 7/10/13; the reviewer did not note whether the specimen(s) observed were viable or not). Under 310 CMR 10.34(3), Land Containing Shellfish is considered significant to this interest if it has been identified and mapped as such by the conservation commission or MassDEP in consultation with DMF.

A GZA biologist conducted a detailed intertidal and subtidal survey of the Project Site, including twelve (12) plots within the intertidal area, a submersible Remotely Operated Vehicle (ROV) camera survey of the deeper subtidal areas, and six (6) benthic grab samples. See Figure 8-2, Transect and Plot Location. No viable shellfish were found within the entire intertidal area at the Project Site, although over 100 intact shells of *Mya arenarea* were observed within the intertidal sediments. Similarly, no living soft shell clams were found in the subtidal area at the Project Site. The dead, intact shells observed within the intertidal area were of a mixed age class. The observations of intact soft shell clam beds with 100% mortality, with no living specimens, is suggestive of a relatively rapid mortality event within the recent past, such as a spill into the Mystic River. The January 9, 2006 oil spill by ExxonMobil Pipeline Company of 10,000 gallons of #2 Fuel oil is one such possibility. However, such a direct connection cannot be definitively determined, and much of this particular 2006 spill was reportedly contained. Therefore, other less well known events might have been the cause of this observed mortality.

A few living blue mussel (*Mytilus edulis)* were observed on rock and wood attachment sites in the subtidal area, primarily in the Mystic River channel area, but not within the embayment and area of proposed dredging. A few oyster (*Crassostrea virginica)* and razor clam (*Ensis directus*) shells, but not living specimens, were observed. Viable polychaetes (bloodworms; *Glycera spp.*) were observed within the sediments, but no viable Mollusca species were observed except for some surface snails (*Crepidula, Llyanassa,* and *Littorina spp.*). Green crabs (*Carcinus maenas;* a non-native species introduced in the 1800s) were present in low numbers in the subtidal areas, but again primarily near the Mystic River channel.

In summary, while it would appear that the Project Site was capable of supporting a viable soft shell clam population at one time, it does not currently do so. However, the Proponent has elected to consider the Project Site as a viable shellfish resource area for the purposes of this environmental review.

Table 8-2, Estimated Density of Benthic Organisms

Benthic Organism		Percent Cover		
Common Name	**Species Name**	**< 1% (trace)**	**1-5% (sparse)**	**5-10% (low)**
Sea Lettuce	*Ulva lactuca*	EZ		
Tube worms	*Riftia pachyptila*	EZ		
Anemone	*Anemonia sulcata*	MR, EZ		
Snails	*Crepidula, Llyanassa and Littorina*	EZ	MR, MR/EZ	
Bloodworm	*Glycera spp.*			MR, MR/EZ, EZ
Blue mussel	*Mytilus edulis*		MR, MR/EZ	
Barnacles	*Cirripedia sp.*		MR. MR/EZ	
Hermit crab	*Paguroidea sp.*	MR, MR/EZ, EZ		
Green crab	*Carcinus maenas*	MR/EZ	MR, EZ	
Flounder	*Paralichthys sp.*	MR/EZ, EZ	MR	
Sculpin	*Cottus sp.*	MR		

Location: MR = Mystic River; MR/EZ = Mystic River/Embayment Zone Transition; EZ = Embayment Zone
Observations taken by submersible ROV video observations on transects through three zones, 8-22-13

Salt Marsh

Salt marshes are defined in 310 CMR 10.32(2) as having this vegetative characteristic:

> *dominant plants within salt marshes are salt meadow cord grass (Spartina patens) and/or salt marsh cord grass (Spartina alterniflora).*

A review of the Project Site history, which was based on Chapter 91 licenses and historic maps, indicates that almost half of the land portion of the Project Site was created during the time of industrial development of the waterfront by filling in a salt marsh and tidal creeks; salt marsh peat sediments are still observable along eroded banks of the fill slopes at certain locations. Two small residual or redeveloping areas of salt marsh (approximately 400± square feet (sf) total) of cord grass (*Spartina alterniflora)* were observed in a location along the southerly shoreline near the upper side of the beach below MHW (see Figure 8-1):

- The larger area to the north (44 ft long and 3-15 ft wide; 350± sf), and

- The smaller area to the south (16± ft long and 2-4 ft wide; 50± sf) near the entrance to the embayment.

Due to its extremely small size, this patch has extremely limited or no biological/physical characteristics of more intact salt marshes. However, this small area of salt marsh is still assumed to be regulated as such.

Coastal Banks

Coastal Banks are defined in 310 CMR 10.30(2) as:

> *the seaward face or side of any elevated landform, other than a coastal dune, which lies at the landward edge of a Coastal Beach, land subject Land Subject to Tidal Action, or other wetland.*

The seaward edge, or toe, of the Coastal Bank begins at the landward edge of the Coastal Beach. Therefore, at the Project Site, the Coastal Bank extends along the entire length of water-facing slopes and structures near the water's edge, comprising approximately 1,600 linear feet. The top of the Coastal Bank follows the top of the slope above the Coastal Beach and the existing seawall.

The non-seawall portions of the Coastal Bank are sparsely to densely vegetated with vegetation that is typical for disturbed coastal sites. See Table 8-3, Existing Shoreline Vegetation and Figure 8-3, Shoreline Vegetation Zones. Dominant invasive species present included Spotted Knapweed, Asiatic Bittersweet, Buckthorn, Japanese Knotweed, *Phragmites*, Seaside Rose, and Tree of Heaven. Native woody species also present included Beach Plum, Red Cedar, Crab Apple, Staghorn Sumac, Eastern Cottonwood and Box Elder. Native herbaceous species present included clover, various grasses, seaside goldenrod, Common Cinquefoil, Sea Lavender and Mugwort.

Land Subject to Coastal Storm Flowage and FEMA Floodplain

Land Subject to Coastal Storm Flowage is defined in 310 CMR 10.04 as:

> *land subject to an inundation caused by coastal storms up to and including that caused by the 100-year storm, surge of record, or storm of record, whichever is greater.*

At the Project Site, the location of Land Subject to Coastal Storm Flowage (LSCSF) was determined based on 100-year flood information provided by the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for the area including the Project Site (Middlesex County, Community Panel No. 25017C0439E, Effective Date: June 4, 2010). According to the FEMA FIRM mapping, the 100-year floodplain, Zone AE, has a base flood elevation of 9 feet

(NAVD88). The Proponent acknowledges the current re-mapping activities that are being undertaken by FEMA in the adjacent Suffolk County. The Draft FIRM for Suffolk County shows a revised base flood elevation of 10 feet NAVD88 for the Mystic River uplands area, one foot higher than the current FIRM for the Project Site. This DEIR is based on the current valid FIRM for the Project Site.

The upland portion of the Project Site is relatively flat, having been created in large part by the historic emplacement of fill on both tidelands and uplands. Most of the existing Project Site ranges in elevation from 10 to 15 feet (NAVD88). Along the water's edge, the Project Site varies in slope down to MHW, which is at 4.35 feet (NAVD88). The 100-Year flood zone based on the FIRM flood elevation of 9 extends along a relatively narrow margin of the Project Site facing the open water, and well over 90 percent of the land portion of the Project Site is outside of the currently-delineated 100-year flood zone (see Figure 8-1, Coastal Resource Areas and Flood Zones).

Riverfront Area

The Riverfront Area on the Project Site is a protected zone paralleling mean annual high-water line along the tidal Mystic River. Although the Mystic River at this location is estuarine, it still maintains riverine characteristics, and therefore is considered to have a Riverfront Area. Upgradient of the Project Site towards and along Mystic River Reservation, the Riverfront Area extends along the entire margin of the river. Just south of Santilli Circle, there is a small unnamed perennial stream that would also extend Riverfront Area onto the adjacent developed lands. MassDEP maps indicate the location of the "mouth" of the river is about 8,400 feet downstream of the Project Site. While the Riverfront Area at most locations in the Commonwealth of Massachusetts is 200 feet wide, in certain urban communities, including Everett, the protected area is 25 feet wide. The primary purpose of establishing the protection zone is to protect the riparian habitat that fringes the river. In a developed urban setting, such as that of the Project Site, a disturbed Riverfront Area provides significant opportunities for restoration that are compatible with on-site development. The shoreline vegetation currently present within the Riverfront Area is listed in Table 8-3, Existing Shoreline Vegetation.

Table 8-3, Existing Shoreline Vegetation

Common Name	Scientific Name	Areas Found[1]	Vegetative Layer[2]	Frequency[3]	Invasive Status[4]
Common Mugwort	*Artemisia vulgaris*	A,B,C	GC	VC	NI
Spotted Knapweed	*Centaure amaculosa*	A,B,C	GC	C-VC	I
Yellow Sweet Clover	*Melilotus officianalis*	A,C	GC	T-C	NI
White Sweet Clover	*Melilotus albus*	A	GC	C	NI
White Campion	*Lychnis alba*	A	GC	T	NI
Orchard Grass	*Dactylis glomerata*	A	GC	C	NI
Common Cinquefoil	*Potentilla simplex*	A	GC	T	NI
Seaside Goldenrod	*Solidagos empervirens*	A,B	GC	C	NI
Unidentified Grass	*unknown*	A	GC	C	unknown
Japanese Knotweed	*Fallopia japonica*	B	GC	C	I
Early Goldenrod	*Solidago juncea*	B,C	GC	C	NI
Sea Lavender	*Limoniumn ashii*	B,C	GC	C	NI
Common Reed Grass	*Phragmites australis*	B,C	GC	C	I
Low Sea Blite	*Suaeda maritima*	B	GC	T	NI
Orach	*Atriplex patula*	B	GC	C	NI
Timothy Grass	*Phleum pratense*	C	GC	C	NI
Wild Carrot	*Daucus carota*	C	GC	C	NI
Common Milkweed	*Asclepias syriaca*	C	GC	C	NI
Cow Vetch	*Vicia cracca*	C	GC	C	NI
Chicory	*Cichorium intybus*	C	GC	C	NI
Blue-joint Grass	*Calamagrostis canadensis*	C	GC	T	NI
Beach Plum	*Prunus maritima*	A,B,C	SH	C	NI
Ornamental Pear	*Pyrus calleryana*	A	SH	C	NI
Staghorn Sumac	*Rhus typhina*	B	SH	C	NI
Seaside Rose	*Rosa rugosa*	B	SH	T	I
Glossy Buckthorn	*Rhamnus frangula*	B,C	SH	C	I
Box Elder	*Acer negundo*	C	SH	T	NI
Staghorn Sumac	*Rhus typhina*	C	SA	VC	NI
Red Cedar	*Juniperus virginiana*	B	SA	T	NI
Crab Apple	*Malus sp.*	B	SA	T	NI
Tree of Heaven	*Ailanthus altissima*		SA	C	I
Eastern Cottonwood	*Populus deltoides*	C	TR	T	NI
Asiatic Bittersweet	*Celastrus orbiculatus*	A	V	C	I

Field estimate during Biological Survey conducted August 15, 2013. See Figure 8-3, Shoreline Vegetation Zones, for Area Designations.
[1]Area A is located on MBTA lands to the west of the Project Site and is included for ecological context purposes.
[2] Vegetative Layer Key: GC=Ground Cover; SH=Shrub; SA=Sapling; TR=Tree
[3] Frequency Key: T=Trace (0-2%); C=Common (2-20%); VC=Very Common (>20%)
[4] Invasive/Non-invasive status based upon the Invasive Plant Atlas of New England, Species List (*www.eddmaps.org/ipane)*

Other Resource Area Considerations

Based upon direct site observations by a professional wetland scientist knowledgeable of the applicable regulatory criteria based on vegetation, soils and hydrology, there are no areas of freshwater wetland (i.e., Bordering Vegetated Wetland or Isolated Wetlands) associated with the Project Site.

This portion of the Mystic River is a highly disturbed, urban-influenced environment. There was no evidence of the presence of Submerged Aquatic Vegetation (SAV) except for occasional rock weed attached to rock and wooden structures (<1% surface coverage). Some non-attached sea lettuce (*Ulva lactuca)* was also observed in trace quantities, as shown in Table 8-2. Maps issued by MassGIS do not indicate the presence of any endangered, threatened, or special concern species within the Project Site. Direct observations of the subtidal area indicate that the benthic zones are comprised primarily of unconsolidated soft mud (silt-clay) over a flat harbor bottom, with the fine grain size of the sediment typically indicative of low current and wave activity in the area. Benthic habitat for shellfish in the waters abutting and near to the Project Site is considered degraded due to chemical contamination and oxygen-poor sediments.

South of the Project Site, downgradient of the MBTA bridge and within the river channel, the sediments are coarser-grained. This segment of the Mystic River is upgradient of the Designated Port Area (310 CMR 10.26(2)), which begins at the Route 99 bridge about 1,000 feet south (downstream) of the Project Site.

Buffer Zone

The Buffer Zone, as defined in 310 CMR 10.04, is:

> *that area of land extending 100 feet horizontally outward from the boundary of any area specified in 310 CMR 10.02(1)(a)*

For the Project Site, the Buffer Zone would extend inland from the top of Coastal Bank resource, as shown on Figure 8-1.

8.1.3 PROJECT EFFECTS

As described in Chapter Two, Project Description, the Project will include buildings, on-site landscaping, pathways, dock and boardwalk facilities, replacement bulkhead, shoreline revegetation with enhancement (a "living shoreline" approach), and dredging. Because both upland soils and sediments in the embayment contain residual levels of contaminants associated with the former chemical manufacturing (Monsanto and others) site use, environmental remediation will be coordinated with the redevelopment, dredging, and shoreline enhancements throughout the Project Site. The entire Project Site, including its coastal resource

areas, was significantly disturbed by its prior usage by chemical companies and as a dumping area for excavated material from the Deer Island Outfall project.

The Project's buildings will have a ground floor elevation of at least 12.35 feet (NAVD88) at the lowest level, which is more than three feet above the current base flood elevation. The surrounding land areas within the Project Site, except along the immediate shoreline, will also be raised above the base flood elevation. The proposed below grade parking garage will conform to all the flood proofing requirements of the applicable State Building Code. Design elements of the Project will also address storm surges, the potential for sea level rise, and sustainability relative to coastal resiliency planning. For additional information related to preparations for future climate changes and sea level rise, see Chapter 6, Greenhouse Gas and Sustainability.

Table 8-4, Summary of Jurisdictional Activities in Coastal Resource Areas, provides a brief summary of activities within regulated wetland resource areas, with brief descriptions of the related anticipated impacts and the permits required for the activities. Section 8.1.3 discusses the impacts of major project elements on the coastal resources. Section 8.1.4 discusses the conformance of the proposed activities with applicable state wetland regulations and performance standards.

Work in Wetlands Protection Act Regulated Resource Areas

The proposed work for the Project includes significant features along the shoreline and below MHW. These features include the following, as shown in Figure 8-4 and 8-5, Coastal Resource Area Impacts.

- Site landscaping, site amenities and pedestrian walkways
- Harborwalk
- Boardwalk and/or pile supported walkways
- Living Shoreline Restoration
- Floating Docks
- Replacement and New Bulkhead
- Dredging (Subtidal and Intertidal Areas)
- Offsite Improvements for Traffic at Santilli Circle and the Harborwalk, north of the Project Site

To some extent, the work elements can be divided between those which will occur above and those which will occur below MHW: the Project Site landscaping and walkways will be above MHW while the dredging will be below MHW. Certain elements transition between these zones where waterfront access or development is involved (i.e., the harborwalk and boardwalk leading to docking floats, the dock, bulkheads, and the "living shoreline" restoration). Above MHW, the coastal resources involved are Coastal Bank, Riverfront Area, Buffer Zone, and Land Subject

to Coastal Zone Flowage. Below MHW, the coastal resources are Coastal Beach and Flats (within Land Subject to Intertidal Action), and Land Under Ocean (Land Containing Shellfish is within both of these areas below MHW). Most of the buildings are outside of the buffer zone.

Table 8-4, Summary of Jurisdictional Activities in Coastal Resource Areas provides a brief summary of activities within regulated wetland resource areas, with brief descriptions of the related anticipated impacts and the permits required for the activities.

Table 8-4, Summary of Jurisdictional Activities in Coastal Resource Areas

State Resource Area Type	Alterations (sf except as noted)					
	Permanent Impacts		Temporary Impacts		Enhancement	
Land Under the Ocean (LUO)	10,400±	Dredging and Floating Dock and Gangway System	30,250±	Dredging and Debris Removal	15,000±	Oyster Bed Construction
Coastal Beaches (CBe) and Tidal Flats (TF)	9,840±	Dredging Conversion to LUO (2,840± sf) Pile Supported Pier/Walkway (7,000± sf)	17,000±	Deteriorated timber bulkhead and shoreline debris removal	12,760±	Salt marsh Creation (10,260±) Clam Bed Restoration (2,500±)
Land Containing Shellfish					15,000±	Creation of Oyster Bed (15,000±) Restored Clam Flats(15,000±)
Coastal Bank	9,310±	Dredging Conversion to CBe (2,310±) New Bulkhead (700±lf) Pile Supported Pier/Walkway (7000±; 335 lf)	10,730±	Shoreline Vegetative Enhancement (550± lf) Replacement Bulkhead (465± lf) Shoreline debris removal (1,600± lf)		
Land Subject To Coastal Storm Flowage	18,010±	Site development				
Salt Marsh					10,260±	Salt marsh Creation
Riverfront Area	23,160±	Site development (additional impacts in association with Santilli Circle traffic improvements and extension of Harborwalk to the north of the Project Site.)				
Buffer Zone	145,750 ±	Site development				
Waters Of The US / Navigable Waters Of The US*	15,550±	Dredging area for Floating Dock/Gangway Pile Supported Pier/Walkway Total Dredging volume (12,700 CY)	35,250 ±	Dredging beyond limits of other work (30,250 ±) Shellfish bed restoration (30,000 ±)	24,990±	Living Shoreline: Coastal Bank Revegetation (14,000±) Salt Marsh Creation (10,990±)
Coastal Zone	33.9 acres	Site Development				

Coordination of Remediation with Site Development

As described in Chapter 12, Solid and Hazardous Waste, MCP Remediation and Compliance, historic contamination at the Project Site will be addressed, in compliance with all applicable laws and regulations, to make the Project Site safe for Project uses including public waterfront access use and facilities along the shoreline. The Proponent expects that a Permanent Solution under the MCP will be achieved prior to completion of Project development.

Soils remediation within the peninsula portion of the Project Site is expected to be completed prior to the initiation of construction activities in this area. These activities will be integrated with proposed shoreline improvements to allow for suitable post-remediation grades, and to the extent practicable, to minimize disruption of the marine environment at the Project Site.

Living Shoreline

As part of the proposed Project, approximately 550 linear feet (lf) of existing shoreline will be improved and enhanced as "living shoreline." This work will enhance the existing shoreline and create a vegetated margin that separates the Project Site from the Mystic River. In this 40-50 foot wide margin fronting along the river, the unsuitable soils and mixed invasive and early successional vegetation and debris will be removed. The coastal margin will be restored by revegetating the shoreline with a band of coastal bank vegetation and salt marsh, greatly expanding the existing limited and unstable salt marsh area. The existing Coastal Bank and part of the Riverfront Area will be remediated and redeveloped with replacement soils and native herbaceous and shrub vegetation for impact mitigation and Project Site enhancement. The species to be planted in this zone are presented in Table 8-5, List of Plantings in Living Shoreline by Zone, and depicted in Figure 8-6, Living Shoreline Area and Cross Section. In total, 10,260± sf of disturbed Coastal Beach/Tidal Flats will be transformed to Salt Marsh. As part of this design, a hard stone reinforced sill will be installed on the water side of the marsh to preserve and stabilize the area for planting and help prevent loss from future episodic storm flow events. Above the elevation of new Salt Marsh, 10,730± sf of Coastal Bank and Riverfront Area will be vegetatively enhanced with native coastal plantings.

Table 8-5, List of Plantings in Living Shoreline by Zone

Species	Common Name	Inundation Zone	Salinity Range (ppt)
Spartina alterniflora	Saltmarsh Cord Grass	MTL – MHW	5 – 30
Spartina patens	Saltmeadow Cord Grass	>MHW	5 – 30
Distichlis spicata	Salt Grass	>MHW	10 – 30
Prunus maritina	Beach Plum	>>MHW	5 – 30
Iva frutescens	Marsh Elder	>>MHW	5 – 30
Baccharis halimifolia	Sea Myrtle	>>MHW	0 – 30
Myrica pensylvanica	Bayberry	>>MHW	0 – 30

MTL = Mean Tide Line; MHW=Mean High Water.
Adapted from VIMS Conf. Proceedings, 2010

Shellfish Bed Restoration

As further enhancement, the Project will take steps to reseed the soft shell clam beds in the area and establish an oyster bed area (see Figure 8-6). These efforts will involve the reseeding of approximately 15,000 sf of flats and creating about 15,000± sf of oyster reef in Land Under Ocean. These efforts will focus on the Tidal Flats and LUO areas seaward of the Living Shoreline area.

While the harvesting of shellfish for consumption in the Mystic River is prohibited, the presence of shellfish resources will provide potential environmental benefits, including:

- Shellfish beds serve as habitat and increase species biodiversity (beyond just the addition of the shellfish species itself) and restore ecological function,
- As intense filter feeders, shellfish improve the local water quality,
- Establishing local soft shell clam and oyster beds increases or improves the distribution of larval shellfish (spat set) to the local area,
- Oyster beds can provide a barrier to prevent beach or shoreline erosion, and
- Oyster beds can provide attachment sites for submerged aquatic vegetation.

The methods for establishing oyster beds are relatively well known and include the placement of oyster shells in a dense bed in intertidal and subtidal areas favorable to development of the beds. At the Project Site, these areas can be part of or extended from the rock stabilization areas associated with the salt marsh restoration areas and will further enhance the stability of the salt marsh areas. Living oysters from field collected areas or hatchery sources can potentially be used to "seed" the local areas since the contribution of larval oysters from the local area (spat set) is likely to be limited or nonexistent. For the oyster bed establishment, cleaned oyster and/or sea clam shells will be placed as bedding in 15,000± sf of subtidal areas as spat attachment sites for oysters, and these areas will be seeded with mature oysters.

The reestablishment of tidal flat soft shell clam populations will be accomplished through reseeding of flats and use of protective mesh to prevent green crab predation until the seed clams are established. The preexisting recent and relatively large populations of clam beds indicate that environmental conditions generally exist in this area that can potentially support clam beds. The clam beds to be reestablished will be located in the intertidal area seaward of the living shoreline area. Seed clams will be obtained from hatcheries or gathered from appropriate clam beds for repopulation of this area.

The shellfish beds will be monitored over a multi-year period to determine if reestablishment is successful, and additional measures can be implemented if necessary. Work will be coordinated with local public interest groups interested in oyster and clam bed reestablishment in the Mystic River estuary including the Massachusetts Oyster Project.

Channel Dredging

The Project will require dredging to accommodate a floating dock system that provides ample draft for water transportation and recreation vessels. The majority of the proposed dredge footprint lies within the historic channel alignment and its associated side slopes.

The preferred alternative analyzed and selected is to dredge a channel of sufficient depth for the planned water traffic at the Project Site. Based on the size of the proposed floating dock system and the drafts of the anticipated transportation and recreational vessels that will be using the channel, it was concluded that a dredge depth of approximately six feet below MLW will be sufficient for the proposed Project. Dredging to this elevation will minimize the potential for adverse impacts to resource areas while still providing ample water depth for the proposed floating dock system and boating access to the Project Site at all tide levels. This dredge depth will result in approximately 12,700 cubic yards (cy) of sediment being removed from the channel within an area of 45,800± sf (40,650± sf in subtidal area with the remainder above MLW).

Other locations were considered for the proposed floating dock system but found to be less desirable to meet the objective of providing an efficient and convenient waterside access that will encourage visitors and employees to utilize public water transportation. Descriptions of these locations and channel depth alternatives are discussed in Chapter 3, Section 3.3.2, Project Dredging Alternatives.

Sediment Characteristics

The proposed 12,700 cy of sediment to be dredged is comprised of generally silty material with little to some fine sands. As the majority of the area of dredging is within the footprint of a prior dredged channel, all of the sediment material to be dredged has been deposited within the past 70+/- years by normal coastal processes. In order to characterize these sediments, a sampling and testing plan was reviewed by the MassDEP and the US Army Corps of Engineers (USACE), and sampling and testing of the proposed channel dredging footprint was conducted in August 2013.

The sampling and testing consisted of 18 cores drilled to the depth of dredging within the dredge footprint. These cores were visually inspected, with every three geographically similar cores combined into a total of 6 composite samples for laboratory testing. The laboratory testing was performed in accordance with MassDEP dredging regulations (314 CMR 9.00) for sediment disposal, and with Solid Waste Policy (COMM-97-001) as applicable to the disposal of soil and sediments at a Massachusetts landfill.

Grain size analyses conducted on the composited samples indicated the sediment consisted of organic silts with approximately 20 to 35 percent fine sands. The composited samples were also analyzed for the following parameters: heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc), semi-volatile organic compounds (sVOCs), polychlorinated biphenyl (PCBs), polycyclic aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPH), extractable petroleum hydrocarbons (EPHs), reactive sulfides, conductivity, total organic carbon (TOC) and water. At this writing, the results of these tests indicated that three parameters (arsenic, TPH, and PCBs) exceeded the criteria for disposal at a Massachusetts lined or unlined landfill, so disposal at an out-of-state facility will be required for materials leaving the Project Site.

Proposed Dredging Methodology

Dredge methods considered included both hydraulic and mechanical dredging. Hydraulic methods of dredging involve a suction cutter blade that is able to mix the sediment with additional water to transport the material effectively through a conduit to a disposal location or a dewatering site. This method adds a significant amount of water to the sediment as it is excavated and would require a large dewatering area. Hydraulic dredging is better suited for sandy materials, which require less drying time than silty or clayey materials. Mechanical methods of dredging utilize a clam shell type bucket which directly cuts into and excavates the material. This process involves less mixing of the sediments with water and keeps the volume of dredge spoil to a minimum. Of the two methods, the mechanical approach results in less environmental impact (turbidity and disturbance), and is therefore the preferred alternative.

The sediment will be dredged utilizing a crane on a floating barge. The crane will use a clam shell type bucket for dredging the sediment. Due to the silty nature of the sediment, the clam shell bucket will be an "environmental type," with rubber seals and overlapping sides to minimize the quantity of sediment that will flow into the water column when the dredged sediment is conveyed into the accompanying collection scow. This type of operation will result in a reduction in the amount of turbidity during construction as compared to a standard clam shell bucket.

It should be noted that the channel dredging operations will be conducted only during those times of the year permitted by state and federal agencies, so as to reduce possible adverse impacts to ecological populations within the dredged area. Comments by DMF suggest that in-water work observe Time of Year (TOY) restrictions recommended for coastal areas in the DMF's published Technical Report, TR-47. Generally, work is not allowed between early spring and mid-summer and again in the fall in areas of known presence of several diadromous fish species that utilize the Mystic River, including alewife (*Alosa pseudoharengus*), blueback herring (*A. aestivalis*), white perch (*Marone americana*), American eel (*Anguilla rastrata*) and American shad (*A. sapidissima*). Winter Flounder (*Pseudopleuronectus americanus*) has also been observed to be present and potentially spawning in the Mystic River and may create TOY restrictions. The Project will coordinate further with DMF to determine appropriate scheduling of the dredging work consistent with the applicable standards.

The next step in the dredging process will be to dewater the dredged sediment prior to off-site disposal. At this writing, the Proponent plans to transport the dredge material to an off-site dewatering location, likely at the property of the contractor performing the dredging operations. As there are significant construction activities that would be occurring at the same time as the dredging (including the excavation for the construction of the underground parking area), it is likely that the off-site dewatering alternative would be more appropriate. Dewatering plans will be finalized during the final design phase of the Project.

The dewatering areas, either on- or off-site, will have an impervious liner on the bottom and sides to contain the dredged material as it dries. As necessary, additives (e.g., cement or clay) will be used to accelerate the sediment dewatering process.

The sediment samples were analyzed for reactive sulfides in order to assess whether odor control will be required during the drying process. The maximum and minimum levels of reactive sulfides detected in the six composite samples were 354 and 286 mg/kg respectively. The allowable EPA threshold for reactive sulfides is 500 mg/kg. As such, it is reasonable to assume that the sediments will not likely create an odor issue during the dredging/dewatering process.

Once the sediments are dried to acceptable standards for street transport (passing the Paint Filter Test), the sediment will be loaded on to trucks or rail cars for transport to an appropriate out-of-state landfill. Prior to exiting the Project Site with the dredged material, trucks will be tightly sealed and tires appropriately washed to free the truck from any construction debris, dust or sediment. This will prevent or minimize tracking of sediments or dredge material onto the public ways.

The effluent from the dewatering areas will be pumped into a settling tank to reduce the amount of fines. From the tank, the effluent will be passed through another filter fabric, or "silt bag," to further reduce the fines, and then the processed water will be reintroduced to the harbor.

Disposal Alternatives

Off-Site Upland Disposal (preferred option)

Laboratory testing results indicated that the dredge sediment exceeds the maximum allowable contaminant levels for sediment disposal at a lined or unlined landfill in Massachusetts, as specified in MassDEP's COMM-97. Other potential disposal options were evaluated but found not to be technically feasible (as discussed in Chapter 3). Therefore, the dredge material will be taken to a permitted out-of-state landfill for appropriate disposal.

Offsite Improvements

Offsite improvements are being considered in two areas that are potentially subject to wetlands jurisdiction. The conceptual traffic improvements at Santilli Circle are designed to stay within the existing highway layout and avoid wetland impacts as much as possible. However, at the conceptual design stage it appears that some small areas of adjacent inland wetlands resource areas could be affected.

Subject to obtaining the necessary easements or other rights in adjacent properties owned by others, the Project intends to provide a harborwalk connection from the Project Site, under the MBTA railroad bridge, across the Gateway Plaza property to connect to the DCR Gateway Park. The conceptual design for this connection does not directly affect any coastal wetland resource areas, but may be within the buffer zone.

8.1.4 COMPLIANCE WITH WETLANDS PROTECTION ACT REGULATIONS AND PERFORMANCE STANDARDS

The proposed Project work subject to regulatory approval under the Massachusetts WPA Regulations (310 CMR 10.00) will achieve regulatory compliance either as a permissible Limited Project (e.g., for most of the proposed dredging) or as permissible activities within the coastal resources. The following section describes

the compliance of each of the Project activities in wetlands jurisdiction with the applicable WPA regulatory performance standards for the respective Resource Areas.

Dredging

Most of the proposed dredging activity occurs within the existing channel previously maintained for dredging in Land Under Ocean (LUO) area, and thus qualifies as maintenance dredging (an allowable limited project) under 310 CMR 10.24(7)(c)(2). Maintenance dredging is similarly permissible under the Federal Clean Water Act (Section 404) and the Rivers and Harbors Act (Section 10) as administered by the USACE New England District. Because much of this dredged material is anticipated to have some level of contamination, it can also be managed in compliance with the limited project provision for remediation (310 CMR 10.24(7)(c)(6)).

In addition to these allowable limited project provisions, the performance standards for LUO (10.25(3)(3-6)) allow for maintenance dredging and improvement dredging for navigational purposes subject to provisions requiring no resultant increase in storm damage and the minimization of adverse impacts on marine fish and wildlife, aquatic vegetation, sediment grain size, water quality and high density areas of invertebrates and plants. As previously described for the LUO environment present in this area (see Section 8.1.2), the quality of the biological resources involved is very limited due to past and present urban influences. The Project is also being designed with all necessary BMPs to minimize construction-related and long term effects on the local marine environment.

A relatively small portion of the dredging is proposed to occur within an area of Coastal Beach (2,840± sf) and Coastal Bank (2,310± sf). This area is located within the past Chapter 91 authorized footprint for channel maintenance, but has been infilled by fill and eroded material over time, resulting in the present Coastal Beach and Coastal Bank designations. While the maintenance-related limited project provisions cited above could authorize dredging in this area, subject to regulatory concurrence during permitting, it should be noted that this work would also be allowable under the performance standards for Coastal Beach, unless the Everett Conservation Commission determines that the degraded area of Coastal Beach in this area is significant to storm damage prevention, flood management or wildlife habitat. These higher resource values would not appear to apply to this limited area in its currently degraded condition. Therefore, the restoration/conversion of this limited area from Coastal Beach to LUO would not represent a loss in overall environmental quality or resource value of the coastal resources. See Figure 8-7, Proposed Waterside Work Plan.

The small area of Coastal Bank being affected is important to storm damage prevention and flood control because it provides a vertical buffer to stormwaters, but the area is not a source of sediment supply to coastal beach. Therefore, the only provisions of 310 CMR 10.30 which would apply to the proposed work are sections 6-8, which require no adverse effect on stability of the Coastal Bank and no effect on the habitat of rare species. Rare species are not present. The stability requirements will readily be met by the proposed design and the construction-related BMPs will limit the potential for adverse secondary impacts.

Debris Clean Up

This activity will occur within resource areas of LUO, Coastal Beach, and Coastal Bank. All such work will be performed with the implementation of appropriate BMPs to control secondary effects. This work can readily meet the applicable performance standards for these resource areas due to the beneficial improvement to the resource areas, subject to regulatory approval.

Living Shoreline – Shoreline Stabilization, Revegetation, and Enhancement

This enhancement activity will temporarily impact resource areas of Coastal Beach (10,260± sf) and Coastal Bank (10,730± sf), but will improve the existing degraded conditions and represents a benefit to the existing coastal margins. Therefore, this work will similarly meet the applicable performance standards for these resource areas due to the beneficial improvement with no loss of resource area. All such work will be performed with the implementation of appropriate BMPs to control secondary effects.

Shellfish Bed Creation and Restoration

This enhancement activity will occur within about 15,000± sf of Tidal Flats and LUO area and will meet the applicable performance standards for this resource area by providing beneficial improvement that will restore the resource area function as "land containing shellfish." For the oyster bed establishment, cleaned oyster shells and stone (est. <150 cy) will be placed as bedding in 15,000± sf subtidal areas as spat attachment sites for oysters, and these areas will be seeded with mature oysters. For the soft shell clam bed re-establishment, viable soft shell clams will be seeded into 15,000± sf Tidal Flats areas. See Figure 8-8, Shellfish Bed Restoration Area.

Bulkhead Replacement

This activity will occur within a 465 lf segment of existing degraded Coastal Bank (i.e., the existing bulkhead) and fringing areas of Coastal Beach. As an existing structure, this activity qualifies as limited project maintenance of an existing structure that was present prior to November 1, 1987, as per 310 CMR 10.24(7)(c)(2). There will be modification and temporary impacts to resource areas as part of this work. See Figure 8-7, Proposed Waterside Work Plan.

New Bulkhead Construction

Similar to the bulkhead replacement described above, this activity will occur within a 700 lf segment of existing degraded Coastal Bank (i.e., the existing bulkhead) and fringing areas of Coastal Beach. Since the limited project provision does not allow for the enlargement of existing structures, this proposed work will require approval under the performance standards for the resources being affected. As described above, these resources are manmade and constructed of fill and rubble, and have degraded over time. The Coastal Bank area is important to storm damage prevention and flood control because it provides a vertical buffer to stormwaters, but the area is not a source of sediment supply to coastal beach. Therefore, the only provisions of 310 CMR 10.30 which applies to the proposed work are sections 6-8, which require no adverse effect on stability of the Coastal Bank and no effect on the habitat of rare species. There are no rare species noted within the local coastal environment and the stability requirements will readily be met by the proposed design. Further, the construction-related BMPs will limit the potential for adverse secondary impacts. This proposed work is also allowable under the performance standards for Coastal Beach unless the Everett Conservation Commission determines that the degraded area of Coastal Beach at the Project Site is significant to storm damage prevention, flood management, or wildlife habitat. As previously discussed, these higher resource values would not appear to apply to this limited area in its currently degraded condition. See Figure 8-7, Proposed Waterside Work Plan.

Pile Supported Walkway

This activity will occur within areas of existing degraded Coastal Bank (i.e., the existing bulkhead) and fringing areas of Coastal Beach. The mechanisms for approval of these elements would be the same as for the areas of new bulkhead. While the footprint of the walkway is 14,000 sf, nearly all of the area beneath the walkway will remain as Coastal Beach and Bank resource areas, except for the area occupied by the piles that support the structure (area of the piles $<140\pm$ sf). See Figure 8-7, Proposed Waterside Work Plan.

Floating Dock

This activity will occur within a 10,400 sf area of LUO which is part of the area of proposed dredging. The performance standards for LUO (310 CMR 10.25(3)-(6)) allow for a project of this nature subject to provisions requiring no increase in storm damage and the minimization of effects on marine fish and wildlife, aquatic vegetation, sediment grain size, water quality, and high density areas of invertebrates and plants. The Project is being designed with all necessary BMPs to minimize construction-related and long-term effects on the local marine environment. Floating docks of this type actually provide habitat in the form of attachment sites for invertebrates and plants, refuge for small fish, and attractants for larger fish. See Figure 8-7, Proposed Waterside Work Plan.

Harborwalk and Landscaping

This activity occurs within the overlapping areas of degraded Riverfront Area (RFA), Land Subject to Coastal Storm Flowage (LSCSF) and Buffer Zone areas, all extending landward from the limits of the existing degraded Coastal Bank. Work will occur within degraded areas of RFA (23,160± sf), with additional area within LSCSF (18,010± sf) and Buffer Zone (145,750± sf). The proposed features will represent an improvement to the area as well as provide public viewing access to the riverine area consistent with local planning goals. All plantings within the RFA will focus on the use of native species and the control of non-native invasive species. See Figure 8-7, Proposed Waterside Work Plan.

Offsite Improvements

Certain proposed offsite improvements will be within or in proximity to wetland resource areas including:

- the traffic improvements at Santilli Circle; and
- the offsite harborwalk extending to the Gateway Park to the north of the Project Site.

The conceptual traffic improvements are estimated to impact 2,300± sf of BVW and 5,000± sf of Riverfront area. The proposed work impacting resources is limited to minor realignments in the roadway and not due to the addition of new lanes. Therefore, it is anticipated that the work will qualify for limited project status as per 310 CMR 10.53(3)(f), although the work will likely be able to meet the applicable performance standards for the resources impacted. Wetland replacement area for the BVW impacts will be possible within the upland between the east bound and west bound lanes of Santilli Highway, east of the circle. See Figure 8-9, Santilli Circle Highway Reconstruction and Potential Wetland Resource Impacts.

The harborwalk extension to Gateway Park, if constructed, would not directly affect any coastal resource areas.

8.1.5 COMPLIANCE WITH STATE 401 WATER QUALITY CERTIFICATION CRITERIA

As noted previously, the Project will be subject to MassDEP Water Quality Certification in accordance with the criteria of 314 CMR 9.00, the applicable regulations. The specific Project elements that require this permit are all work that occurs below the Highest Annual Tide Line requiring dredge or fill, including structural elements. From an area and work perspective, most of this permitting relates to dredging, but other regulated elements include work on the bulkheads, piles for walkway and dock support and mitigation work (i.e., living shoreline, shellfish beds). Section 9.01(2) states that "314 CMR 9.00 applies to the discharge of dredged or fill material, dredging and dredged material disposal activities in

water of the United States within the Commonwealth..." The Project proposes to remove approximately 12,700 cy of sediment from the existing channel within the embayment on the Project Site. In addition, there will be 2,300 cy of fill placed below MHW in association with the reconstruction of old bulkheads and construction of new sections, placement of 150± cy of oyster shells for reef creation and 1,300± cy of soil removal and replacement in association with the "living shoreline" mitigation development. The 401 Water Quality Certification (401 WQC) application will be filed with MassDEP in conformance with regulatory requirements. The Project will also require the filing of a US Army Corps of Engineers (USACE) permit application.

Per the regulations, a project-specific sampling and analysis plan is required to be developed prior to the filing of a 401 WQC application for projects involving dredging of over 10,000 cy. This plan was developed and submitted in draft form to MassDEP and the USACE for their review and comment. Communications with MassDEP indicated that the sampling and analysis plan for the Project Site was acceptable and that the dredged material was to be removed from the Project Site rather than reused on the Project Site.

8.2 CHAPTER 91 TIDELANDS

The Project Site is comprised of flowed tidelands, filled (formerly flowed) tidelands, and non-jurisdictional upland within Everett. Of the approximately 33.9 acre site, approximately 8.3 acres are flowed tidelands (below MHW), 10.63 acres are filled tidelands, and 14.97 acres are non-jurisdictional upland.

8.2.1 DETERMINATION OF APPLICABILITY

The Proponent submitted a Request for Determination of Applicability (RDA) on May 1, 2013 to MassDEP to confirm Chapter 91 jurisdictional boundaries at the Project Site. On July 29, 2013, the MassDEP Waterways Regulation Program issued a Jurisdictional Determination concluding that approximately half of the upland areas of the Project Site area is private tidelands and half is non-jurisdictional uplands (Jurisdictional Determination No. JD13-3943). A small portion of the Project Site on the south side is within flowed Commonwealth tidelands. The Chapter 91 jurisdictional boundaries approved by MassDEP are shown in Figure 8-10, Chapter 91 Jurisdiction. These boundaries have been used for the analysis of Project tidelands impacts and compliance presented in this Section 8.2 of the DEIR.

8.2.2 PROJECT WORK IN TIDELANDS AREAS

Approximately half of the land portion of the Project Site is within Chapter 91 jurisdiction (see Figure 8-10, Chapter 91 Jurisdiction). Most of the retail and restaurant space, and approximately 1/3 of the hotel is within jurisdiction. The remaining portion of the hotel, gaming area, some entertainment space and the parking garage is not in jurisdiction. There is approximately 6.26 acres of open space within jurisdiction, which includes the landscaped waterfront promenade, a harborwalk, a gazebo and a large landscaped area at the southern end of the peninsula. Waterside structures include a floating dock to support the berthing of water transportation vessels.

The Project will provide substantial public benefits and water-dependent uses along the Project Site's waterfront. It will substantially transform the vacant waterfront industrial site into a vibrant and active development by providing:

- High quality open space along the Mystic River
- 100% of the ground floor are Facilities of Public Accommodation
- A water transportation dock
- A continuous harborwalk along the waterfront
- Direct bicycle and pedestrian connections to the DCR Gateway Park and to Broadway

Open Space

Significant public open space along the water's edge, incorporating a waterfront promenade and harborwalk along the Project shoreline will be developed with outdoor seating, viewing areas, a gazebo, and public docks to accommodate water transportation vessels

Facilities of Public Accommodation

The Project's ground floor includes approximately 190,047 sf of Facilities of Public Accommodation (FPA), such as restaurants, retail shops, and a large landscaped interior lobby along the water-side of the Project, providing an attractive destination to draw members of the public to actively use and enjoy the waterfront.

Water Transportation Dock

To support water transportation access to the Project Site, including water taxis, transient vessels, and potential future transportation services, a floating dock will be constructed. This new dock will allow passenger vessels and other boats to berth at the Project Site and take advantage of all the public amenities including the harborwalk and open space, and facilities of public accommodation.

Harborwalk

A new accessible harborwalk along the entire waterfront will substantially enhance the users' experience along the Everett waterfront. Viewing areas will allow users to watch the waterfront activity along the Mystic River. There will be direct access to the water and connections from the harborwalk to the DCR Gateway Park and to Broadway.

Pedestrian and Bicycle Connections

The Project also proposes to connect the on-site harborwalk to existing pedestrian/bicycle waterfront trails in Gateway Park to the west, to planned trails accessing other regional park and transit facilities along the Mystic and Malden Rivers and to bike lanes and pedestrian paths in Everett's Lower Broadway area.

To achieve the foregoing benefits, the Project will need to substantially upgrade its land and water infrastructure. To support water transportation access to the Project Site, including water taxis, transient vessels, and potential future transportation services, a floating dock will be constructed, requiring approximately 12,700 cy of maintenance dredging to restore the navigation channel in the embayment. See Figures 8-4 and 8-5, Coastal Resource Area Impacts. Along the waterfront promenade, a small portion of the water's edge will need to be stabilized and straightened with a new bulkhead and some minor filling. Approximately 465 lf along the north and northwest sides of the cove will be restored with a new steel sheetpile bulkhead. Fill will be placed landward of this new bulkhead. Along the west side of the cove, approximately 330 lf of the existing shoreline will be stabilized with a new stone revetment with a deck above it. A new bulkhead will continue south of this area for approximately 230 feet. It will replace the existing deteriorated bulkhead and stabilize the existing fill and rubble shoreline. The remaining portion of the shoreline along a portion of the cove and the south side of the peninsular will be substantially improved with a "living shoreline." This area, which is approximately 550 feet long, will be enhanced with a vegetated margin that separates the Project Site from the Mystic River and will be restored with a band of coastal bank vegetation and salt marsh, greatly expanding the existing limited and unstable salt marsh area. See Section 8.1 for a detailed explanation of the "living shoreline."

8.2.3 WATERWAYS IMPACTS AND IMPROVEMENTS (COMPLIANCE WITH CHAPTER 91 REGULATORY STANDARDS)

The Project is treated as a nonwater-dependent use pursuant to 310 CMR 9.12 of the Waterways Regulations because it combines nonwater-dependent uses (hotel, casino and mixed-use commercial development) and water-dependent uses (public waterfront open space and dock facilities). Applicable Chapter 91 regulatory standards consider non water-dependent tidelands development to serve a proper

public purpose if the project complies with the nonwater-dependent use standards of 310 CMR 9.51 - 9.53 and is consistent with the policies of the Massachusetts Office of Coastal Zone Management (CZM).

The Everett Central Waterfront Municipal Harbor Plan (the "Everett MHP"), which includes the Project Site, is currently being reviewed by the Secretary of the Executive Office of Energy and Environmental Affairs (see Section 2.1.6). The Everett MHP is expected to establish enhanced and/or alternative standards for waterfront development, access and amenities that are tailored to Everett's specific planning objectives for the Lower Broadway/Central Waterfront area. The Project has been designed to be compatible with the provisions of the Everett MHP, which is included as Appendix C, as approved by Everett and proposed to the Secretary.

The following section discusses the Project's consistency with the existing applicable Chapter 91 standards provided in 310 CMR 9.00. This discussion also identifies Project features for which flexibility provided through substitute standards under the Everett MHP may be applicable to promote more effective realization of public waterfront interests at the Project Site.

The following standards of the Chapter 91 Regulations are relevant to the Project and, except as specifically described below, are substantially met by the Project as follows:

310 CMR 9.32(1)(a) - Categorical Restrictions on Fill and Structures

Under this regulatory provision, fill, or structures serving water-dependent uses including public pedestrian access are permitted in flowed tidelands (below the high water mark), and limited fill is permitted in flowed tidelands for certain purposes such as shoreline stabilization and elimination of shoreline irregularities.

The Project's work along the shoreline conforms to these standards. It includes fill and structures for water-dependent uses, including a floating dock for transient vessels and other water transportation access, seaward of the MHW mark, incorporating, as required, reasonable measures to minimize the amount of fill. Approximately 335 linear feet of shoreline will be stabilized with sloped riprap under the proposed pile-supported pedestrian deck instead of installing sheet piling and fill behind it. This design will help minimize the amount of fill in flowed tidelands. The creation of a "living shoreline," which involves placement of a sloped, stone seawall, will minimize wave refraction and create habitat along much of the existing shoreline. Approximately 150 cy of oyster shells will be placed in tidal waters off the south side of the peninsula as part of the oyster restoration project (see Oyster Bed Creation and Restoration in Section 8.1.2 above).

310 CMR 9.33(1) - Environmental Protection Standards

The Project will be designed in compliance with applicable environmental regulatory programs of the Commonwealth, including the Massachusetts Wetlands Protection Act (see Section 8.1 above). The Project is expected to submit a Notice of Intent to the Everett Conservation Commission in spring 2014.

310 CMR 9.37 - Engineering and Construction Standard

All fill and structures will be certified by a Registered Professional Engineer and will comply with all applicable safety regulations.

310 CMR 9.40 - Standards for Dredging and Dredged Material Disposal

Standard 310 CMR 9.40 requires projects with dredging to meet specific requirements for resource protection, operational requirements for dredging and disposal, and standards regarding supervision of dredging and disposal activities.

Maintenance dredging at the Project Site, as described more fully in Section 8.1 above, is proposed to be at an elevation of approximately -6 feet MLW (dredging to extend to -7 feet with one foot over-dredge) and will remove approximately 12,700 cy of material. The dredge material is expected to be disposed of at an upland location in accordance with the MassDEP Water Quality Certification regulations (314 CMR 9.00). The Project will comply with applicable provisions of Chapter 91 regulations, 310 CMR 9.40, as follows:

- No dredging will occur during the period designated by the Division of Marine Fisheries;
- No dredging will obstruct or hinder the passage of fish including anadromous or catadromous fish runs;
- The design and timing of dredging activities will minimize any adverse impacts on shellfish beds and fishery resource areas; and
- Dredging and disposal activity will meet the requirements for supervision pursuant to 310 CMR 9.40(5).

310 CMR 9.51(3)(b) – Uses of Tidelands Within 100 Feet of the Shoreline

Chapter 91 Regulations limit ground level uses of structures within 100 feet of the project shoreline to water-dependent uses and Facilities of Public Accommodation where goods and services are made available to the general public (such as retail, restaurant, hotel, museum and entertainment facilities).

All of the Project's ground level facilities within 100 feet of the Project shoreline, including the pedestrian open space, public dock facilities, adjoining ground floor retail and restaurant uses, and hotel entry structure, comply with this standard.

310 CMR 9.51(3)(c) – Water-Dependent Use Zone

In accordance with 310 CMR 9.51(3)(c), the Project must preserve the Project Site's capacity to serve water-dependent uses. This standard is met by ensuring that new or expanded nonwater-dependent buildings and at or above-grade parking facilities are set back from the Project Shoreline, which is located along the present high water mark of the Project Site. The setback or "water-dependent use zone" (WDUZ) extends for the lesser of 100 feet or 25% of the weighted average distance from the present high water mark to the landward lot line of the property, but no less than 25 feet.

On the Project Site, the WDUZ is equal to 85 feet on the eastern facing shoreline of the Project Site and 100 feet along the southern facing shoreline of the Project Site (see Figure 8-11, Water Dependent Use Zone and Facilities of Public Accommodation).

The current Project design includes approximately 2,583 sf of building area located within the WDUZ. Approximately 1,847 sf of the total is within the middle of the south side of the Project's low-rise retail and restaurant building, and an additional small portion (736 sf) is within the porte-cochere entry to the hotel and gaming resort. Other structures located in the WDUZ, such as the covered gazebo along the waterfront promenade, are water-dependent uses, and therefore are allowed in the WDUZ.

The MHP proposes to allow a reconfigured WDUZ provided that it (1) provides a total area equal or greater to that required in the baseline Chapter 91 regulation, (2) maintains a minimum of 25 feet of width from the Project shoreline, and (3) provides that any portion of a building with 50 feet of the shoreline contains Facilities of Public Accommodation. The Project will satisfy such alternative requirements by reconfiguring the WDUZ to include additional area within the large open space at the southern end of the retail wing by an amount that would provide an equivalent size WDUZ offering a larger and more appropriate area for water-dependent activities. The WDUZ will be a minimum of 25 feet in width and will not include any buildings within 50 feet of the Project shoreline.

310 CMR 9.51(3)(d) - Open Space

In accordance with 310 CMR 9.51(3)(d), no more than 50% of the Project Site may be occupied by nonwater-dependent use buildings. The regulations require that, at a minimum, one square foot of open space is to be provided on the Project Site, landward of the Project Shoreline, for each square foot of tidelands occupied by the footprint of buildings containing nonwater-dependent uses.

The Project Site contains 10.63 acres[1] of filled tidelands landward of the Project Shoreline (see Figure 8-12, Open Space). The Project includes building footprints that will occupy approximately 4.36 acres of land in tidelands jurisdiction, with the remaining 6.27 acres (or approximately 59%) available as open space. Accordingly, the Project design as currently proposed complies with this regulatory standard.

310 CMR 9.51(3)(e) – Height

In accordance with 310 CMR 9.51(3)(e), building heights on Chapter 91 filled tidelands are limited to 55 feet or lower within 100 feet of the high water mark (HWM) and an increased height limit landward of the 100-foot line where buildings may be stepped up on a 1:2 slope. Height is measured from the existing grade to the top of the main roof of the building. See Figure 8-13, Chapter 91 Allowable Building Massing, for a depiction of the height limits at the Project Site that would apply under baseline Chapter 91 regulations[2].

Under this standard, buildings within 100 feet of the high water mark may have heights of up to 55 feet above grade and could be stepped up at a 1:2 slope to a maximum height of 245 feet near the north side of the Project Site's tidelands jurisdiction area. The allowable heights are shown in blue on Figure 8-13. Landward of the Chapter 91 jurisdictional boundary, building height is regulated only by local zoning.

The Project proposes a 386-foot hotel tower, approximately one third of which is located within Chapter 91 tidelands jurisdiction and would exceed the baseline regulatory height standards described above, and is shown in red on Figure 8-13 as Massing compliant with the MHP. The Project's low-rise retail wing within tidelands jurisdiction is substantially lower than the Chapter 91 regulatory height standard.

The baseline regulatory height limits can be varied under an MHP substitute provision incorporating alternative height standards and related requirements to ensure that such buildings will not have adverse impacts on wind, shadow, and other conditions of the pedestrian level waterfront environment that could detrimentally affect water-dependent activity and public access. As is typical in many municipal harbor plans, the MHP has proposed alternative height standards and requires projects seeking to use height substitute provisions to demonstrate that they result in no more adverse wind, shadow, and other conditions at the ground level than would a Chapter 91-compliant project. For the Project, the MHP increased the maximum allowable heights to 400 feet in the back portion of the

1 As measured to the Project Shoreline.
2 The high water mark used for these calculations extends along the waterfront portion of the project site and in addition uses the high water mark along the west side of the adjacent property (MBTA rail line) to determine the allowable building height on the Project Site.

Project Site and decreased the maximum allowable heights to 55 feet in the peninsula portion of the Project Site. See Appendix C, Everett Central Waterfront Municipal Harbor Plan for details and exhibits.

The Project will utilize the height substitution proposed in the MHP and conform to the proposed height limits of 400 feet and 55 feet. Wind studies in the EENF and shadow studies conducted for the MHP evaluated the potential impacts from the Project design and concluded that the proposed hotel tower would not adversely affect pedestrian comfort levels in the waterfront areas of the Project Site.

310 CMR 9.52(1)(b) Pedestrian Access Network

310 CMR 9.52(1) requires that a project include a public access network that is appropriate for the Project Site.

Consistent with the requirements of the MHP, the Project will comply with this standard by providing a 14-foot wide walkway along the entire Project shoreline, (10 foot clear with adjacent space for related pedestrian amenities, e.g., lights, benches and trash receptacles). All of the open space areas will be accessible including the docks and floats. The Project also proposes to connect the on-site harborwalk to existing pedestrian paths in DCR's Gateway Park to the west of the Project Site provided easements or other necessary rights can be obtained from the land owners and to Lower Broadway pedestrian walkways and bike lanes to the east of the Project Site.

310 CMR 9.52(1)(a) – Water-Dependent Activity Facilities

The standard 310 CMR 9.52(1)(a) requires that projects with a WDUZ include at least one facility that generates a water-dependent use activity.

The Project's floating dock, which will provide water transportation access to transient vessels, water taxis and an opportunity for potential future ferry service, along with other amenities to activate the waterfront pedestrian open space, will enable the Project to meet this standard.

310 CMR 9.53 - Commonwealth Tidelands

The Project Site includes only a small area of Commonwealth tidelands, within flowed tidelands located on the south side of the Project Site. No work, fill, or structures are proposed within these flowed Commonwealth tidelands. Therefore, the provisions of 310 CMR 9.53(2)(a) pertaining to uses of Commonwealth tidelands do not apply. Note that a portion of the shellfish restoration project, however, is located within Commonwealth tidelands.

310 CMR 9.54 – Consistency with Coastal Zone Management Policies

The Project is consistent with the applicable Coastal Zone Management policies as described in Section 8.3.

Additional Requirements of the MHP

The MHP sets forth additional requirements for development within the MHP area beyond the proposed substitutions and offsets. The MHP requires the provision of a public access network no less than 10 feet clear along the entire length of the water dependent use zone and which connects to adjacent public ways and public access facilities. The MHP requires the provision of public boat landings docks that could serve a variety of uses, including water taxis, water shuttles and touch-and-go access. The MHP mandates the provision of indoor or outdoor public gathering spaces, such as an amphitheatre for outdoor performances or other space. The MHP further sets forth standards for high quality open space, including wayfinding signage, interpretive signage, lighting, public seating, and security cameras. All of the above requirements will be reviewed with Everett through the site plan approval process and integrated into the final project design plans as the Project moves forward.

Summary

The Project as designed will conform to the requirements of 310 CMR 9.00 as modified through the proposed MHP. The Project will in many respects exceed the requirement of Chapter 91 by providing;

- Approximately two acres more open space than required by Chapter 91,
- Very high quality open space with the goal of enhancing public access, including outdoor gathering areas, gazebos and landscaped areas,
- Over 190,000 square feet of Facilities of Public Accommodation where only a few thousand square feet are required under the regulations, providing tremendous destination value and activation of the Project Site,
- Approximately twice the length of harborwalk required under the regulations by extending the harborwalk to the north to connect to the DCR Gateway Park, subject to receipt of an easement or other property rights to construct the improvements,
- A "Living Shoreline" with restored shoreline vegetation, salt marsh as well as soft shell clam and oyster bed restoration, to enhance the urban industrial waterfront environment, and
- The only public docking facilities in Everett where water taxis and shuttles can land and discharge passengers.

8.3 CONSISTENCY WITH COASTAL ZONE MANAGEMENT PROGRAM

The Project is required to be consistent with CZM Program Policies in accordance with the standards of 310 CMR 9.54. The Department shall presume that the standard is met if the Project Site is covered by a MHP and the Project conforms to that MHP. The Project's consistency with relevant policies and principles is described below.

8.3.1 WATER QUALITY

Water Quality Policy #1

Ensure that point source discharges and withdrawals in or affecting the coastal zone do not compromise water quality standards and protect designated uses and other interests.

Significant stormwater management system improvements, including new pre-treatment and treatment Best Management Practices (BMPs) and new stormwater outfalls designed to comply with all applicable water quality regulations and standards, will protect water quality in the Mystic River and will improve conditions relative to the quality of existing stormwater runoff from the Project Site.

Water Quality Policy # 2

Ensure the implementation of nonpoint source pollution controls to promote the attainment of water quality standards and protect designated uses and other interests.

The Project's stormwater strategy for construction and post-construction activities is described in Chapter 9 of this DEIR. All stormwater generated from impervious surfaces will be treated for the removal of suspended solids and potential contaminants in accordance with the MassDEP Stormwater Management Standards. BMPs will also be implemented to ensure that erosion and sedimentation are minimized during construction. As deemed necessary, erosion and sedimentation controls, such as hay bales and siltation fences, will be used. The Project will also ensure that water quality laws pertaining to recreational boating facilities are addressed in their design and use.

8.3.2 HABITAT

Habitat Policy #1

Protect coastal, estuarine, and marine habitats—including salt marshes, shellfish beds, submerged aquatic vegetation, dunes, beaches, barrier beaches, banks, salt ponds, eelgrass beds, tidal flats, rocky shores, bays, sounds, and other ocean habitats—and coastal freshwater streams, ponds, and wetlands to preserve critical

wildlife habitat and other important functions and services including nutrient and sediment attenuation, wave and storm damage protection, and landform movement and processes.

As described more fully in Section 8.1 above, while the Project involves work in Coastal Bank, Land Containing Shellfish, Land Under Ocean, and Coastal Beach resource areas, all applicable wetlands regulatory performance standards to protect these resources will be met and BMPs will be implemented during construction of both the landside and waterside structures to minimize any potential impacts to the related habitat resources.

Habitat Policy #2

Advance the restoration of degraded or former habitats in coastal and marine areas.

The Project Site has been severely degraded by over 100 years of filling, dredging and long-term use as a chemical plant, among other industrial uses. The Project includes remediation of the Project Site and prevention of any future degradation of the Project Site and impacts to the surrounding habitats.

The Project will be creating a "living shoreline" along the south side of the peninsula. This feature will substantially help the habitat as well as provide a natural buffer between the proposed landside uses and the existing wetland resources and habitat in the Mystic River. The Project will also take steps to restore the soft shell clam and oyster beds in the area to enhance the habitat of the Mystic River. This work will improve the local water quality, reduce shoreline erosion, and help improve the habitat. The shellfish beds will be monitored over a multi-year period to determine if they are successful and can be added in other parts of the Mystic River.

8.3.3 COASTAL HAZARDS

Coastal Hazard Policy #1

Preserve, protect, restore, and enhance the beneficial functions of storm damage prevention and flood control provided by natural coastal landforms, such as dunes, beaches, barrier beaches, coastal banks, land subject to coastal storm flow, salt marshes, and land under the ocean.

The Project Site has been either dredged or filled over the past 100 years, and no natural coastal landforms remain. The proposed living shoreline and shellfish restoration areas, however, will help minimize storm damage by providing natural coastal landforms. The Project will install sheetpiling and stone riprap along parts of the coastal bank to minimize slumping of previously filled areas into the coastal beach and land under ocean wetland resources.

Coastal Hazard Policy #2

Ensure that construction in water bodies and contiguous land areas will minimize interference with water circulation and sediment transport. Flood or erosion control projects must demonstrate no significant adverse effects on the project site or adjacent or downcoast areas.

The use of pilings to support the pier deck along a portion of the waterfront will minimize interference with circulation and sediment transport. Abandoned pilings and piers in the Project Site will also be removed to help improve the water quality and remove hazards to vessels navigating the local waters. Steel sheetpiling will be used along some of the water's edge to straighten some of the irregular and dilapidated shoreline structures. This sheetpiling will help stabilize the shoreline and minimize slumping into previously and proposed dredged areas.

8.3.4 PUBLIC ACCESS

Public Access Policy #1

Ensure that development (both water-dependent or nonwater-dependent) of coastal sites subject to state waterways regulation will promote general public enjoyment of the water's edge, to an extent commensurate with the Commonwealth's interests in flowed and filled tidelands under the Public Trust Doctrine.

Public Access Policy #2

Improve public access to coastal recreation facilities and alleviate auto traffic and parking problems through improvements in public transportation and trail links (land or water-based) to other nearby facilities. Increase capacity of existing recreation areas by facilitating multiple use and by improving management, maintenance, and public support facilities. Ensure that adverse impacts of developments proposed near existing public access and recreation sites are minimized.

The Project creates public access to the waterfront that is currently inaccessible. The Project also provides public access along the waterfront and will connect to the DCR waterfront areas to the west. A new waterfront walkway will connect the Project to the MBTA and DCR property on the west side of the Project Site. A new floating dock system for transient vessels will allow users to berth at the Project Site and provide another mode of transportation. A ferry at the Project Site would also create additional connections to other parts of the Boston Harbor as well as provide a new water access point along Everett's waterfront, which currently has no direct public access to the water.

8.3.5 GROWTH MANAGEMENT

Growth Management Principle #1

Encourage, through technical assistance and review of publicly funded development, compatibility of proposed development with local community character and scenic resources.

Most of the Project Site is within the planning area of the MHP, which is currently being reviewed by CZM. The MHP establishes a vision for the use and growth of the non-industrialized portion of Everett's waterfront. The recently approved LBD Plan established use districts along with other planning areas in order to shape, direct and help create a vision of improvements and development for the Lower Broadway District. The Project is consistent with the MHP and LBD Plan.

Growth Management Principle #3

Encourage the revitalization and enhancement of existing development centers in the coastal zone through technical assistance and financial support for residential, commercial, and industrial development.

The Project involves the redevelopment of a vacant, dormant commercial/industrial urban site located on the Mystic River in Everett. It also involves redevelopment of vacant and dilapidated piers and bulkheads in order to support recreational, commercial, and water-dependent uses.

8.3.6 PORTS AND HARBORS

Ports and Harbors Policy #1

Ensure that dredging and disposal of dredged material minimize adverse effects on water quality, physical processes, marine productivity, and public health and take full advantage of opportunities for beneficial reuse.

Dredging for the Project will be conducted in accordance with local, state and federal regulations to ensure that it minimizes impacts to the environmental resources as well as the public's health. Dredge disposal options for out-of-state, off-site upland disposal have been evaluated, and an appropriate landfill will be identified for such disposal during further design development (see Section 8.1.3).

Ports and Harbors Policy #4

For development on tidelands and other coastal waterways, preserve and enhance the immediate waterfront for vessel-related activities that require sufficient space and suitable facilities along the water's edge for operational purposes.

The Project supports this policy by creating new waterfront infrastructure necessary to support passenger transportation, recreational boating and pedestrian access to and along the waterfront. It will meet the requirements of the Waterways Regulations by ensuring that tidelands are utilized for water-dependent uses and serve a proper public purpose in accordance with the regulations.

Ports and Harbors Policy #5

Encourage, through technical and financial assistance, expansion of water dependent uses in Designated Port Areas and developed harbors, re-development of urban waterfronts, and expansion of physical and visual access.

The Project proposes expansion of water-dependent uses at the Project Site. It also supports redevelopment of this urbanized waterfront as well as expansion of physical and visual access.

Expansion of Water-dependent Uses

Activities that support expansion of water-dependent uses include:

- Removal of all the deteriorated timber pilings within the watersheet of the Project Site,
- Dredging of previously dredged areas to improve vessel access to the proposed docks,
- A water transportation docking facility to allow connections to other parts of Boston Harbor, and
- Transient docking.

Re-development of Urban Waterfronts

The Project will substantially redevelop this urban waterfront with new public access and uses including a waterfront walkway, outdoor seating and docks to support transient vessels and a potential ferry service. It will redevelop the existing vacant site into mixed uses, including a casino, hotel, restaurants and retail spaces, which will substantially activate Everett's waterfront as well as create vibrant place for patrons of the facilities and members of the public to visit and enjoy.

Expansion of Physical and Visual Access

The Project proposes a waterfront walkway that will be lined with retail and restaurant uses on one side and the water-based uses along the water's edge. This complementary mix of uses provides physical access and visual access to the water-dependent uses. The Project will expand visual access for pedestrians to enjoy the panoramic views of the Mystic River, Boston skyline and vessel activities on the Mystic River. Viewing areas, benches and other amenities will also support public use of the waterfront walkway.

8.4 PUBLIC BENEFITS REVIEW

In accordance with the requirements of 301 CMR 11.05(4) and 310 CMR 13.03, this Section provides information to support the Secretary's Public Benefits Determination for projects in tidelands.

8.4.1 NATURE OF TIDELANDS AFFECTED BY THE PROJECT

The tidelands affected by the Project are comprised of filled private tidelands and flowed tidelands. The filled tidelands, approximately 10.64 acres, were filled between 1880 and 1943 according to Chapter 91 licenses. This vacant and relatively flat site has been severely degraded due its use as a chemical manufacturing facility for over 70 years and other industrial uses for the past 50 years. This area is currently going undergoing response actions under the Massachusetts Contingency Plan to address historic contamination. The approximately 8.30 acres of flowed tidelands at the Project Site consists of a dredged channel that leads to the main channel in the Mystic River and some intertidal flats and banks. There are also old dilapidated pilings, piers and bulkheads throughout the watersheet and along the shoreline. There are no landlocked tidelands on the Project Site.

8.4.2 PURPOSE AND EFFECT OF THE PROJECT

The purpose of the Project is to develop the Project Site into a new mixed-use resort complex that provides gaming rooms, hotel, restaurant and retail uses, as well as substantial open space for public use and direct access to and along the waters of the Mystic River. This Project alone will substantially transform the Lower Broadway section of Everett from a vacant, contaminated industrial site to a new, vibrant, and economically viable and publicly accessible waterfront development.

As a result of the Host Community Agreement, Everett will receive significant economic benefits from this Project. The Proponent will make millions of dollars of annual payments to Everett in the form of taxes, a PILOT (payment in lieu of taxes) and other community impact fees. Everett residents and businesses will be given preferential treatment for Project jobs and services. The Host Community Agreement also specifies that the Project Site will be remediated in accordance with the Massachusetts Contingency Plan, that the Project will incorporate in its design certain features that promote and protect the Project's waterfront for public access, use and enjoyment, and that the Proponent will work cooperatively with Everett to include features or programs in the Project that benefit the arts and local artists.

8.4.3 IMPACT ON ABUTTERS AND SURROUNDING COMMUNITY

The Project will provide new public access to the waterfront, which has been inaccessible to the public for over 120 years. A new stormwater system will positively impact the water quality of the Mystic River. The shadows from the proposed Project buildings will have relatively minor impacts on the neighboring properties. Although there will be transportation impacts, substantial mitigation measures will be implemented, including pedestrian and vehicular improvements to the main roads and rotaries leading to the Project Site. Public transportation will be improved with new bus and boat shuttles.

8.4.4 ENHANCEMENT TO THE PROPERTY

The Project Site, which has been underutilized for many decades, is vacant except for a few trailers on it. The Project Site will be significantly improved. In connection with the development of the Project, the contamination created by historic releases of oil and hazardous materials will be addressed to make the Project Site safe for all proposed hotel, casino, retail and public waterfront access uses. A new stormwater system will pre-treat runoff and substantially improve the quality of water discharged into the surrounding waters of the Mystic River. Public access to the Project Site will be provided through substantial open space and a waterfront walkway. Direct access to the water will be created with a water transportation dock enabling vessel connections to the Boston Harbor. Additional Facilities of Public Accommodation will include retail and restaurant uses, as well as a hotel, gaming area, conference facilities and other amenities.

8.4.5 BENEFITS TO THE PUBLIC TRUST RIGHTS IN TIDELANDS AND OTHER ASSOCIATED RIGHTS

As previously discussed, the Project will significantly expand and enhance water-dependent uses at the Project Site. It will create the first direct public access to the waterfront in Everett. The new docking facility for water taxis, touch-and-go vessels, and other potential water transportation services, will allow the public to make water transportation connections to other parts of the Boston Harbor. The Project will include a waterfront walkway and pedestrian connections to the DCR Gateway Park on the west side of the Project Site, as well as to Broadway on a new access road on the east side of the Project Site. The public will have the opportunity to walk or bicycle along the waterfront and enjoy the open space and views, in particular, from the southern end of the Project Site along the Mystic River. The Project also includes bicycle and pedestrian connections to and through Gateway Park to the Wellington Station on the MBTA Orange Line and to other elements of the regional park system administered by DCR along the Mystic and Malden Rivers.

Figure 8-1
Coastal Resource Areas and Flood Zones
Source: *GZA GeoEnvironmental, Inc., 2013*

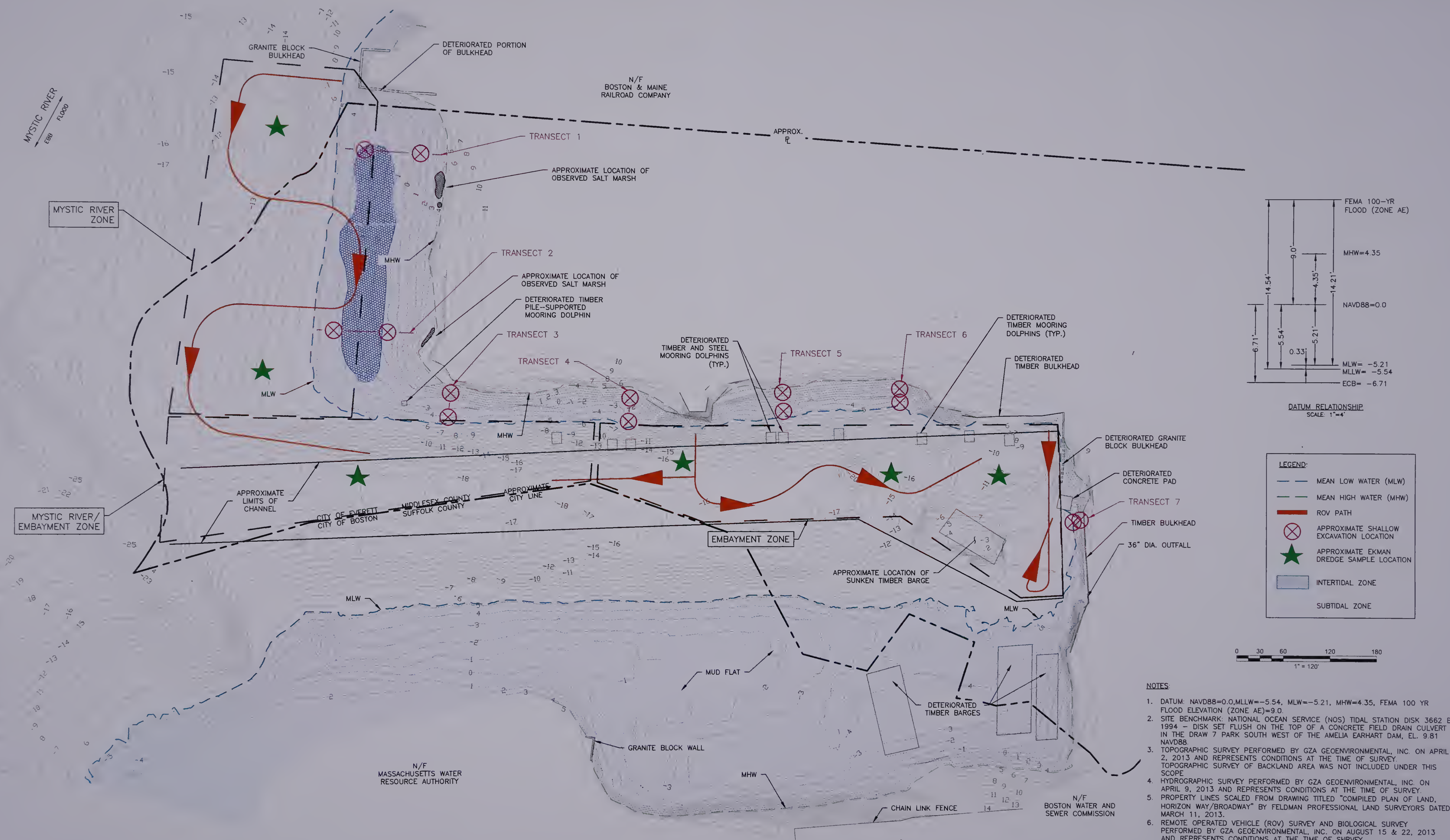

Figure 8-2
Transect and Plot Location
Source: *GZA GeoEnvironmental, Inc., 2013*

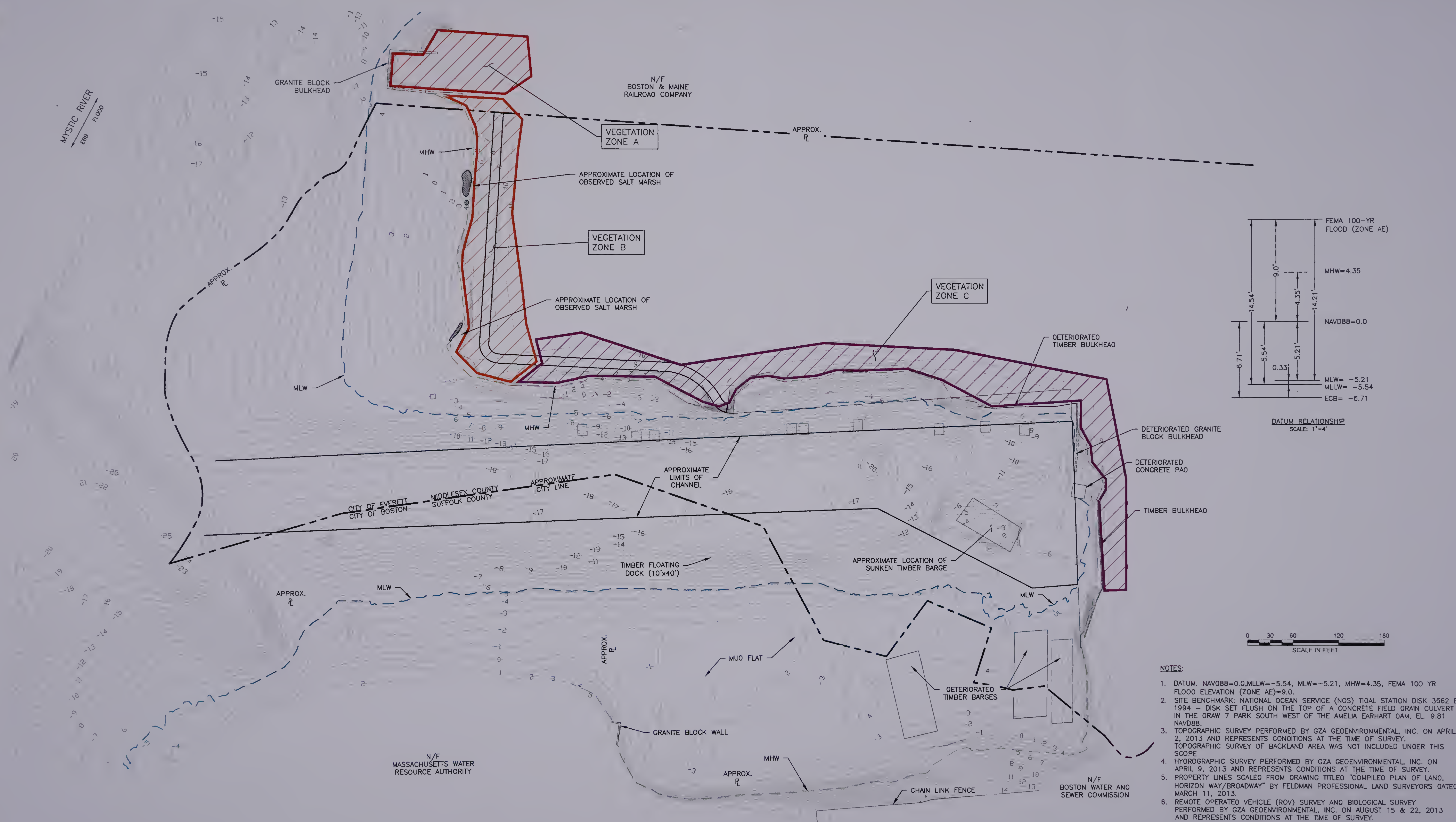

Figure 8-3
Shoreline Vegetation Zones
Source: *GZA GeoEnvironmental, Inc., 2013*

Figure 8-4
Coastal Resource Area Impacts (1 of 2)
Source: *GZA GeoEnvironmental, Inc., 2013*

Figure 8-5
Coastal Resource Area Impacts (2 of 2)
Source: *GZA GeoEnvironmental, Inc., 2013*

NOTES:

1. DATUM: NAV088=D.0,MLLW=-5.54, MLW=-5.21, MHW=4.35, FEMA 100 YR FLOOD ELEVATION (ZONE AE)=9.D.
2. SITE BENCHMARK: NATIONAL OCEAN SERVICE (NOS) TIDAL STATION DISK 3662 B 1994 - DISK SET FLUSH ON THE TOP OF A CONCRETE FIELD DRAIN CULVERT IN THE DRAW 7 PARK SOUTH WEST OF THE AMELIA EARHART OAM, EL. 9.81 NAV088.
3. TOPOGRAPHIC SURVEY PERFORMED BY GZA GEOENVIRONMENTAL, INC. ON APRIL 2, 2013 AND REPRESENTS CONOITIONS AT THE TIME OF SURVEY. TOPOGRAPHIC SURVEY OF BACKLANO AREA WAS NOT INCLUOEO UNDER THIS SCOPE
4. HYDROGRAPHIC SURVEY PERFORMED BY GZA GEOENVIRONMENTAL, INC. ON APRIL 9, 2D13 AND REPRESENTS CONDITIONS AT THE TIME OF SURVEY.
5. PROPERTY LINES SCALEO FROM DRAWING TITLED "COMPILED PLAN OF LAND, HORIZON WAY/BROADWAY" BY FELOMAN PROFESSIONAL LANO SURVEYORS DATEO MARCH 11, 2013.
6. REMOTE OPERATED VEHICLE (ROV) SURVEY AND BIOLOGICAL SURVEY PERFORMED BY GZA GEOENVIRONMENTAL, INC. ON AUGUST 15 & 22, 2D13 AND REPRESENTS CONDITIONS AT THE TIME OF SURVEY.

Figure 8-6
Living Shoreline Area and Cross Section
Source: *GZA GeoEnvironmental, Inc., 2013*

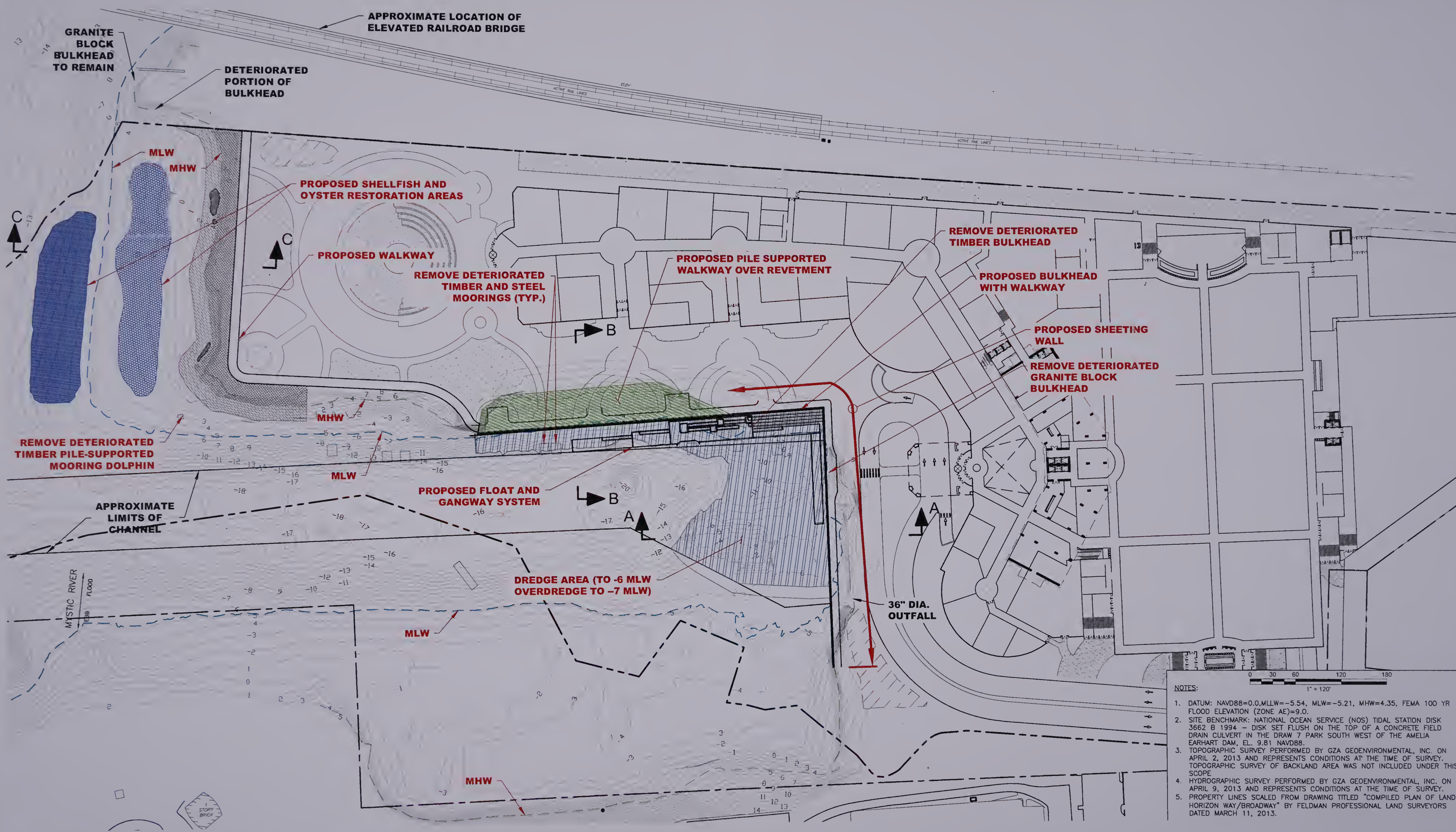

Figure 8-7
Proposed Waterside Work Plan
Source: *GZA GeoEnvironmental, Inc., 2013*

Coastal Bank Restoration Area

Salt Marsh Restoration Area

Shellfish and Oyster Restoration Areas

Figure 8-8
Shellfish Bed and Shoreline Restoration Areas
Source: *GZA GeoEnvironmental, Inc., 2013*

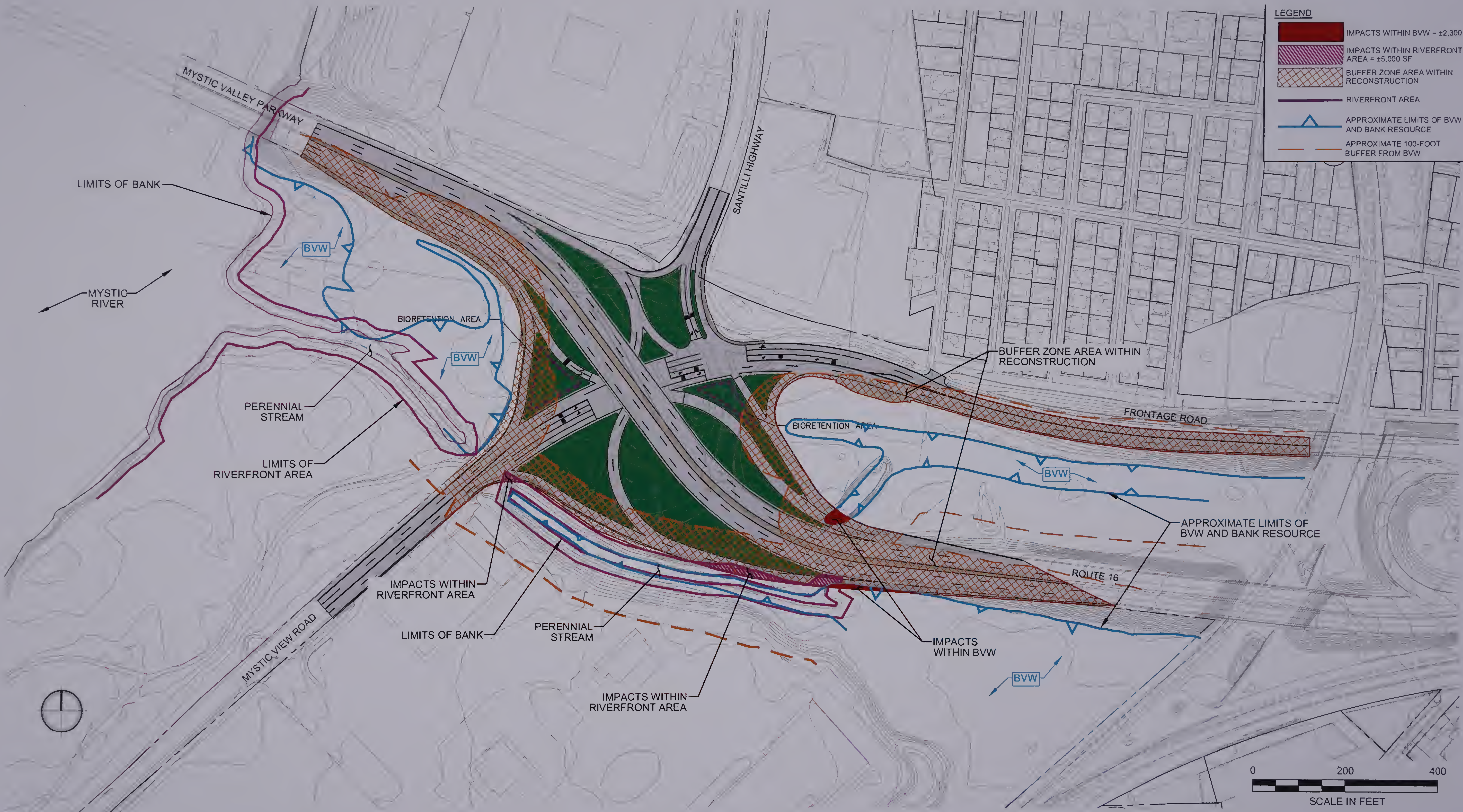

Figure 8-9
Santilli Circle Highway Reconstruction and Potential Wetland Resource Impacts
Source: *GZA GeoEnvironmental, Inc., 2013*

Figure 8-10
Chapter 91 Jurisdiction
Source: *MassDEP, Fort Point Associates, Inc., 2013*

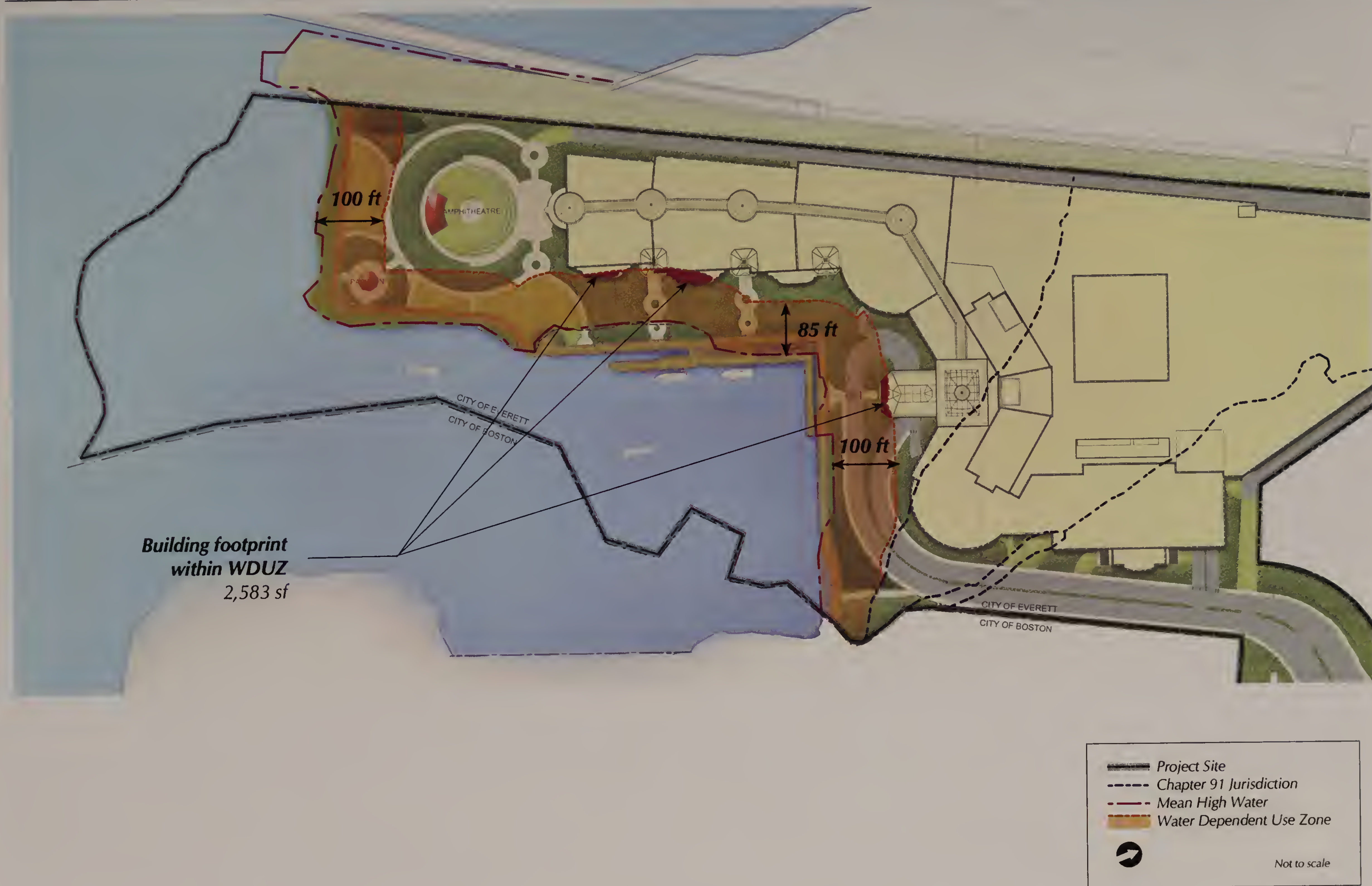

Figure 8-11
Water Dependent Use Zone
Source: *MassDEP, Fort Point Associates, Inc., 2013*

Wynn Everett
Everett, Massachusetts

Figure 8-12
Open Space
Source: *MassDEP, Fort Point Associates, Inc., 2013*

Figure 8-13
Chapter 91 Allowable Building Massing
Source: *ICON architecture, inc., 2013*

Chapter 9

Stormwater

CHAPTER 9: STORMWATER

As discussed in Chapter2, Project Description, the Project Site is compact, and the Project is highly organized around a functional urban design concept that utilizes already disturbed and impacted soils, and minimizes impacts to undeveloped land. Open space provided on the Project Site will be extensively landscaped and directly connected to the Mystic River waterfront. The Program includes underground parking within the building footprint, and minimal paved areas to support vehicular access into the Project Site. The building's roofs generate the vast majority of stormwater runoff. Stormwater management measures have been carefully planned to optimize pollution prevention and treatment with both sophisticated and highly effective mechanical means and also bioretention and green roof components.

9.1 EXISTING STORMWATER CONDITIONS

Stormwater flow from the Project Site currently drains overland across degraded land surfaces covered with compacted gravel and broken bituminous pavement, including some pervious and some impervious areas. The Project Site has three primary drainage areas, all of which drain toward and into the Mystic River. See Figure 9-1, Existing Stormwater Conditions.

Stormwater runoff from the back (northwesterly) part of the Project Site drains overland in a northwesterly direction towards the MBTA tracks. Some of the runoff flows directly to the Mystic River while some is intercepted by shallow depressions. The southwesterly depression appears to overflow towards the Mystic River. The depression located in the northerly portion of the Project Site appears to be picked up by the storm drain system located on the adjacent MBTA lot. This drain system serving the MBTA lot crosses through the Project Site and ultimately discharges through a 36-inch outfall pipe located where the Project Site adjoins the inside end of an embayment of the Mystic River. According to the survey, an easement of an unknown width gave Boston Elevated Railway Company, predecessor to the MBTA, the right to construct and maintain this 36-inch storm drain.

The northeasterly portion of the Project Site, located adjacent to the MBTA bus maintenance facility, drains to two small depressions located within a utility easement of the New England Power Company. The overflow from these depressions and the portion of the Project Site surrounding Horizon Way drains to catch basins in Horizon Way. These catch basins tie into the 36-inch storm drain described above that outlets into the dredged channel. The southern part of the Project Site drains via overland flow directly to the Mystic River.

Under current Project Site conditions, stormwater flow is essentially unmanaged. The Project Site's shallow depressions and outdated catch basins provide perfunctory treatment of the stormwater prior to its discharge to the Mystic River. The Project Site contains very

little vegetation, and what vegetation exists is insufficient to mitigate stormwater impacts. Overall, existing Project Site conditions provide insignificant treatment of stormwater runoff.

9.2 PROPOSED STORMWATER IMPROVEMENTS

9.2.1 ON-SITE STORMWATER MANAGEMENT SYSTEM

In connection with development of the Project, a new stormwater management system will provide extensive control and treatment of stormwater flow from the approximately 25.6 acre Project Site, significantly benefiting water quality. This section describes the proposed stormwater management system, including open space features, waterfront restoration with new landscaping, and structural best management practices, all of which will positively impact stormwater runoff conditions and meet all applicable MassDEP Stormwater Management Standards (the "Standards"). In addition, stormwater runoff will be carefully managed during construction in accordance with a Storm Water Pollution Prevention Plan that complies with the EPA's National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP).

Due to the limited capacity of the existing 36-inch storm drain described previously in Section 9.1, the proposed stormwater management system will include two new outfalls to service the Project. Both of the proposed outfalls will discharge to the Mystic River. They will be fitted with tide gates and discharge through a rip rap apron, stone revetment and/or other energy dissipation device to control velocities and deter erosion.

Relocation of the existing 36-inch storm drain from the MBTA property around the Project's buildings is proposed. The existing outfall will be rebuilt as part of the proposed bulkhead and coastal harborwalk. The relocated outfall will be located adjacent to its existing location, and will enter the Mystic River at approximately its current location. The relocated 36-inch storm drain will continue to serve only the adjacent MBTA property, and will not receive new connections from the proposed stormwater management system at the Project Site.

Response actions to address contamination resulting from historic releases of oil and hazardous material at the Project Site (see Chapter 12), while expected to decrease the potential for future water quality impacts to sediment and surface waters, will generally reduce soil permeability thereby limiting the opportunity for use of stormwater infiltration as a stormwater management strategy. However, where feasible in selected locations, landscaping features such as filtering bioretention areas and tree box filters are proposed as described below. Stormwater management Best Management Practices (BMPs) such as pavement sweeping, deep sump catch

basins, hydrodynamic stormwater separators (aka "hydrodynamic separators") and stormwater media filters are also proposed as part of the stormwater management system to achieve water quality improvements in accordance with the Standards. See Figure 9-2, Proposed Stormwater System.

The intertidal and subtidal areas of the Project Site are considered theoretically capable of supporting shellfish but are currently within an area prohibited for shellfish growing or harvesting. As described in Chapter 8, studies conducted by the Project found no viable shellfish and evidence of extensive shellfish mortality in the intertidal area, along with very limited evidence of mussels and non-native crabs in the subtidal areas. However, the Proponent has elected to consider the Project Site as a viable shellfish area for purposes of this environmental review. Accordingly, the stormwater management system will be designed to incorporate source controls, pollution prevention and structural stormwater BMPs that would be appropriate for Critical Areas such as shellfish growing areas.

The proposed stormwater management system is described as follows based on the areas of the Project Site that will be serviced by the system.

Entry Drive Area

Stormwater runoff from the entry drive will be primarily directed to tree box filters. The tree box filters will be lined and equipped with subdrains to convey the treated stormwater to a bioretention area located between the entry drive and the Mystic River. See Figure 9-2, Proposed Stormwater System. The tree box filters and bioretention area consist of shallow depressions which use plant, mulch, soils and microbes to treat stormwater, and which include an impermeable liner with an underdrain that intercepts the treated stormwater. The tree box filters and the bioretention area will provide treatment by slowing the flow of stormwater as it filters through the soil and is taken up by the plants. Overflows from the bioretention area during larger storm events will be directed to a two-staged outfall ("Outfall #1") located within the channel.

Rooftop Runoff

A substantial majority of the impervious area on the redeveloped Project Site will be rooftop area, which is expected to generate stormwater runoff with lower levels of total suspended solids ("TSS") than would be generated by parking lots and driveways. Nevertheless, the proposed stormwater management system incorporates measures that will treat all rooftop runoff prior to its discharge to the proposed new outfalls.

A portion of the building will be provided with rooftop planting or "green roof" located on the northwest edge of the back of house service area. Green roofs are

permanent rooftop plantings within a growing medium. The plantings provide evapotranspiration, reducing the runoff generated by the roof and cooling the surrounding air. The rooftop planting system has a drainage board above a waterproof membrane that allows runoff from larger storm events into the building's roof drainage system. Beyond their positive effects of improving stormwater quality and reducing runoff, green roofs provide the added benefit of insulating the building and reducing the heat island effect associated with typical roof materials.

Rooftop runoff from the northerly portion of the building, including the green roof and the hotel roof, will be routed to a stormwater hydrodynamic separator followed by a stormwater media filter prior to tying into the proposed Outfall #1 in the channel.

Rooftop runoff from the southwesterly retail portion of the building will be routed through a stormwater hydrodynamic separator followed by a stormwater media filter prior to connecting to the second outfall ("Outfall #2").

The hydrodynamic stormwater separators and media filters will be manufactured units that treat stormwater based on proprietary techniques. Hydrodynamic separators typically use either chambered systems or swirl concentrators to trap and retain sediment. Media filters are typically chambers which contain filter media cartridges that can be targeted to remove specific pollutants. The stormwater media filter provides enhanced stormwater treatment, including removal of fine solids and nutrients that other treatment devices may leave behind. Both hydrodynamic separators and media filters are provided in different sizes based on the flow rate and pollutant removal efficiency that is intended to be captured.

Service Yard Area

Runoff from the service yard located in the northeasterly portion of the Project Site and the service access along the northwesterly edge of the building will be collected by deep sump, hooded catch basins and directed to a hydrodynamic separator followed by a media filter. Deep sump catch basins provide pollutant removal by allowing coarse sediments, debris and trash to settle within the sumps below the outlet pipe invert. The hoods provide containment for floatable pollutants such as oil and grease. The treated runoff ultimately ties into the proposed Outfall #2 to the Mystic River.

Open space area to the southwest and southeast of the retail building

Runoff from this primarily landscaped open space area will be collected by a drain inlet and routed to a stormwater separator, and then directed to a filtering bioretention area. This area ultimately drains to proposed Outfall #2.

Access Road

The stormwater runoff from the proposed access road will be treated for water quality with measures such as deep sump catch basins, hydrodynamic separators and media filters. The Project will conduct additional investigations to identify areas that may be suitable for infiltration BMPs and if appropriate, incorporate into the design.

9.2.2 PROPOSED STORMWATER IMPROVEMENTS FOR OFF-SITE ROADWAY MITIGATION MEASURES

Broadway

It is anticipated that the storm drainage system in Route 99 will be upgraded with green infrastructure elements if opportunities are available to incorporate them. Green infrastructure uses vegetation and soils to manage stormwater runoff. Infiltration trenches, tree box filters and porous pavements area some of the green infrastructure that can be incorporated in the urban environment.

Santilli Circle

The stormwater improvements are expected to include deep sump catch basins, stormwater separators and bioretention areas. The catch basins would remove approximately 24% of the TSS load, stormwater separators would provide 655 TSS removal, and the bioretention area would provide an additional 90% of TSS removal. Accordingly, a treatment train comprised of these three measures is anticipated to achieve in excess of the required 80% of average annual TSS removal prior to stormwater runoff discharge. See Figure 9-3, Santilli Circle Proposed Improvements.

9.2.3 COMPLIANCE WITH DEP STORMWATER MANAGEMENT STANDARDS

Redevelopment projects are required to meet several of the Standards only to the maximum extent practicable. However, as further described below, the Project's goal is to meet or exceed aspects of the Standards pertaining to water quality.

Standard 1: Untreated Stormwater

No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

The two new outfalls serving the Project Site following development and the relocated and reconstructed outfall serving the adjacent MBTA property will be designed to provide adequate protection from scour.

The post-development stormwater management system will direct runoff to two new outfalls via BMPs that will treat and significantly improve the water quality of the runoff leaving the Project Site. Such BMPs include deep sump catch basins, tree box filters, bioretention areas, hydrodynamic separators and stormwater media filters. The treatment capabilities of the proposed drainage system features are described in the discussion of compliance with Standard 4.

Standard 2: Post-development Peak Discharge Rates

Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04.

Runoff from the Project Site drains to a portion of the Mystic River that is subject to coastal storm flowage. Therefore, the Project currently seeks a waiver for controlling peak discharge rates. Although the stormwater management system does not include detention to fully control peak flows from the proposed development, post-development peak flows to off-site areas will be less than pre-development peak flows to the same off-site areas, as a larger portion of the Project Site runoff will be directed to new outfalls that discharge to the Mystic River.

Standard 3: Recharge to Groundwater

Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

For redevelopment projects, Standard 7 is required to be met only to the maximum extent practicable. Opportunities for recharge of the groundwater through use of infiltration stormwater BMPs are very limited due to response actions being undertaken to address historic releases of oil and hazardous materials. A bioretention area located near the entry drive may be designed to exfiltrate, should it be determined that Project Site conditions in that location are favorable.

Standard 4: 80% Total Suspended Solids (TSS) Removal

Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS).

For redevelopment projects, the pretreatment and structural BMPs of Standard 7 are required to be met only to the maximum extent practicable.

Standard 4 requires stormwater management systems to be designed to remove 80% of the average annual load of TSS) and specifies the runoff volume requiring TSS treatment (i.e., the required water quality volume). For areas discharging to Critical Area waters that include shellfish growing areas, the required water quality volume is equal to 1 inch of runoff multiplied by the total impervious area of the post-development Project Site. The stormwater management system will be designed to treat a water quality volume equal to 1 inch of runoff, as opposed to the typical 1/2 inch of runoff, times the total impervious area.

The stormwater management system will be designed to remove at least 80% of the TSS load through the use of treatment trains which consist of some combination of deep sump catch basins, tree box filters, hydrodynamic separators, stormwater media filters and bioretention areas. In addition, street sweeping is a non-structural practice that would be used to provide additional TSS removal.

Based on the pretreatment provided by a street sweeping program and the tree box filters before final treatment by the bioretention area, discharges from Outfall #1 are expected to have over 90% of the average annual TSS load removed prior to being discharged downstream.

The rooftop runoff is expected to receive a total TSS removal of approximately 93% via treatment by proprietary hydrodynamic separators followed by media filters.

Runoff from the open space area will be treated by a proprietary hydrodynamic separator, which will discharge to a bioretention area, providing a total TSS removal of approximately 97%.

The catch basins collecting runoff from the service yard area will remove approximately 25% of the TSS load. This runoff will then be sent to a stormwater

separator, which will provide 65% TSS removal, before flowing through a stormwater media filter system which will provide an additional 80% of TSS removal. The total estimated TSS removal through this treatment train will be well over the required 80% TSS removal. This rate includes 10% TSS removal credit for street sweeping.

The following discusses in further detail the estimated TSS removal rates that are associated with each of the individual stormwater BMPs proposed for the Project Site, based on guidance from the Standards:

Street Sweeping (Pretreatment)

Street sweeping is proposed for the entry and exit drive area and the service yard area. A street sweeping program is eligible to receive credit towards the 80% TSS removal standard given that it meets the criteria set forth in the *Massachusetts Stormwater Handbook*. A TSS removal rate of 10% may be assumed for a street sweeping program that uses a high efficiency vacuum sweeper monthly on average with a sweeping scheduled primarily in spring and fall.

Deep Sump Catch Basin with Hood (Pretreatment)

These precast structures with inlet grates are designed to trap debris, trash and coarse sediment. These are used to collect runoff in the service area and emergency access drive. A TSS removal rate of 25% may be assumed for deep sump catch basins provided that they are designed as off-line systems.

Treebox Filters (Pretreatment)

The tree box filters are expected to remove 80% of the average annual TSS load and provide some pollutant removal.

Stormwater Separators (Pretreatment)

The stormwater separators proposed for the Project are flow-through proprietary units that use a combination of screens, baffles and hydrodynamic separation to remove floatables, debris, sediments, oils and other pollutants from stormwater runoff. In accordance with the Massachusetts DEP Wetlands Program, "Standard Method to Convert Required Water Quality Volume to a Discharge Rate for Sizing Flow Based Manufactured Proprietary Stormwater Treatment Practices," proprietary separators are eligible for a maximum TSS removal rate credit of 80% provided that they are sized to capture and treat the full water quality volume. For the purposes of conceptual level estimates of TSS removal, a TSS removal rate of 65% is assumed for proprietary stormwater separators.

Stormwater Media Filter (Treatment)

The proprietary stormwater media filters proposed for the Project consist of concrete vaults with media cartridges that can target fine solids, soluble heavy metals and total nutrients (including phosphorus). These units must also be sized in accordance with the Massachusetts DEP Wetlands Program, "Standard Method to Convert Required Water Quality Volume to a Discharge Rate for Sizing Flow Based Manufactured Proprietary Stormwater Treatment Practices" to be eligible for a TSS removal rate of 80%.

Filtering Bioretention Areas (Treatment-Filtration)

Filtering bioretention areas, commonly known as rain gardens, are landscaping features, typically in shallow depressions, that use plant, mulch, soils and microbes to treat stormwater. They include an impermeable liner with an underdrain that intercepts the runoff. Runoff filters through the mulch and soil and is collected in underdrains and returned to the storm drain system. Designed to treat the water quality volume required by the DEP's Stormwater Standards, they contain an overflow structure to safely convey flows during larger storm events. They are allowed a TSS removal rate of 90% if designed in accordance with the Standards.

Standard 5: Land Uses with Higher Potential Pollutant Loads

For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable.

Land uses with higher potential pollutant loads (LUHPPL) include parking lots with high-intensity-uses (1,000 vehicle trips per day or more). Nearly all of the parking for this Project is protected from exposure to rainfall due to its location in a parking garage; thus, this Project is not a LUHPPL. However, Project Site stormwater runoff from paved areas (driveway and service yard) will be treated through BMPs equivalent to those that would be used if Standard 5 applied.

Standard 6: Protection of Critical Areas

Stormwater discharges near or to certain defined Critical Areas require the use of specific source control and pollution prevention measures and the specific structural stormwater best management practices as provided in the Massachusetts Stormwater Handbook. Critical Areas are defined to include shellfish growing areas.

Portions of the intertidal and subtidal areas of the Project Site are theoretically capable of supporting shellfish, but appear not to do so currently. In addition, the

Project Site along with surrounding portions of the Mystic River is currently classified as a prohibited shellfish growing area, meaning the area is closed to harvesting of shellfish. Nevertheless, the Proponent has elected to consider the Project area a viable shellfish resource for purposes of stormwater management compliance. The BMPs to be provided will comply with the measures otherwise prescribed in the Stormwater Handbook under Standard 6, including provision of treatment for 1 inch of runoff.

Standard 7: Redevelopment Projects

A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6.. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

The Project is being developed within a previously developed area and will substantially improve existing conditions. As provided in Standard 7, the Project will meet Standards 2 and 3 to the maximum extent practicable and the Project's goal is to substantially satisfy or exceed the remaining standards.

Standard 8: Erosion/Sediment Controls

A plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.

The Project will install erosion and sediment controls prior to any major earthwork activity. A Storm Water Pollution Prevention Plan (SWPPP) will be prepared in conjunction with a Notice of Intent (NOI) filing with the EPA for coverage under the National Pollution Discharge Elimination System (NPDES) Construction General Permit (CGP).

Standard 9: Operation/Maintenance Plan

A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed.

A Long-Term O&M Plan will be developed and implemented for the Project's stormwater management system. The O&M Plan provides for the inspection and

maintenance of structural BMPs. The general maintenance procedures for each BMP as follows will ensure proper functionality as designed.

Deep sump catch basins will be inspected four times per year and cleaned four times a year or whenever the depth of the deposits is greater than or equal to one half the depth from the bottom of the invert of the lowest pipe in the basin.

Stormwater separators and stormwater media filters will be inspected in accordance with manufacturer requirements but no less than twice a year following installation, and no less than once a year thereafter. Sediment will be removed at a frequency or level specified by the manufacturer. Filter cartridges for the media filters will be replaced as specified by the manufacturer.

Bioretention areas will be inspected and trash will be removed monthly. Soil on the surface will be inspected and erosion repaired monthly. Annual maintenance will be performed on the plants, soil and mulch.

The trees in the tree box filters will be inspected annually. The media surface will be raked twice a year to maintain permeability. The expected tree life is 5-10 years. The media shall be replaced when the tree is replaced.

Green Roofs require active maintenance including irrigating, weeding, mulching and pruning. Plantings will be replaced as needed.

Outfalls and associated rip rap apron, stone revetment and/or other energy dissipation devices will be inspected at least once per year and after major storm events. Debris such as trash, branches, and sediment will be removed. Repairs will be made if scour is observed.

Standard 10: Illicit discharges

All illicit discharges to the stormwater management system are prohibited.

The Project will construct and operate an entirely new stormwater management system in compliance with all applicable regulatory stormwater standards. An illicit discharge compliance statement will be provided with the filing of the Notice of Intent under the Wetlands Protection Act.

9.2.4 CONSISTENCY WITH DRAFT PATHOGEN TMDL FOR THE BOSTON HARBOR WATERSHED

A Draft Total Maximum Daily Loads for Pathogens ("Draft TMDL") has been published for the Boston Harbor Watershed (which includes the Mystic River Sub-basin) to address bacterial and other fecal-related pollution that could potentially enter these surface waters. Potentially waterborne pathogens (disease-causing

organisms) are contained in partially-treated or untreated sanitary human waste and feces of warm-blooded wildlife. The Draft TMDL provides for monitoring of indicator bacteria and recommends a range of management and public education measures, to be undertaken principally by municipalities, intended to reduce levels of indicator bacteria within the relevant surface waters in the watershed.

A major source of the pathogens in the Mystic River is combined sewer overflows (CSOs) that occur in wet weather when high volumes of rain runoff overload sewers collecting stormwater and sanitary sewage in one interconnected system, resulting in the discharge of untreated sewage. Everett does not have such a combined system but other municipalities along the Mystic and Malden Rivers do operate combined facilities. Other potential sources of pathogens include illicit connections from sanitary sewers into separate storm drains. There are no known or suspected illicit connections at or in the vicinity of the Project Site in the Lower Broadway area of Everett.

Stormwater runoff from land uses that involve household or domestic animals or congregation of wildlife, such as geese, gulls and ducks, can also contribute to pathogen concentrations in water bodies. The Project does not include residential uses that are more typically considered sources of pet waste, or any uses expected to attract congregations of wildlife. As such, the Project Site is not expected to generate any significant contributions of pathogens to stormwater runoff. Nevertheless, the stormwater management improvements to be provided by the Project are consistent with the pollution prevention strategies generally recommended in the Draft TMDL and its accompanying TMDL Implementation Guide. To the extent that any pathogens could be contained in storm drainage from the Project Site, the proposed biofiltration areas and tree box filters would assist in controlling such pollutants and regular maintenance of other stormwater treatment BMPs will remove sediment in which pathogens could be present.

The Project's long-term operation and maintenance plans will include encouraging any pet owners using the waterfront walkways to clean up after pets and, if needed, signage that discourages feeding of geese or ducks. The Proponent may consider providing a buffer zone to keep domesticated pets separated from the river.

The Project also intends to investigate, in collaboration with Everett and the MWRA, assisting with modifications to regional wastewater infrastructure that would reduce the incidence of CSOs into the Mystic River associated with the Cambridge Branch Sewer, a facility that receives sanitary flows from several nearby municipalities. Such upgrades may, for example, involve directing Everett sanitary flow away from the Cambridge Branch Sewer in order to support that facility's function and capacity. See Chapter 13, Wastewater, for further information on potential regional sanitary sewer improvements.

Figure 9-1
Existing Stormwater Conditions
Source: Howard/Stein-Hudson Associates, Inc., 2013

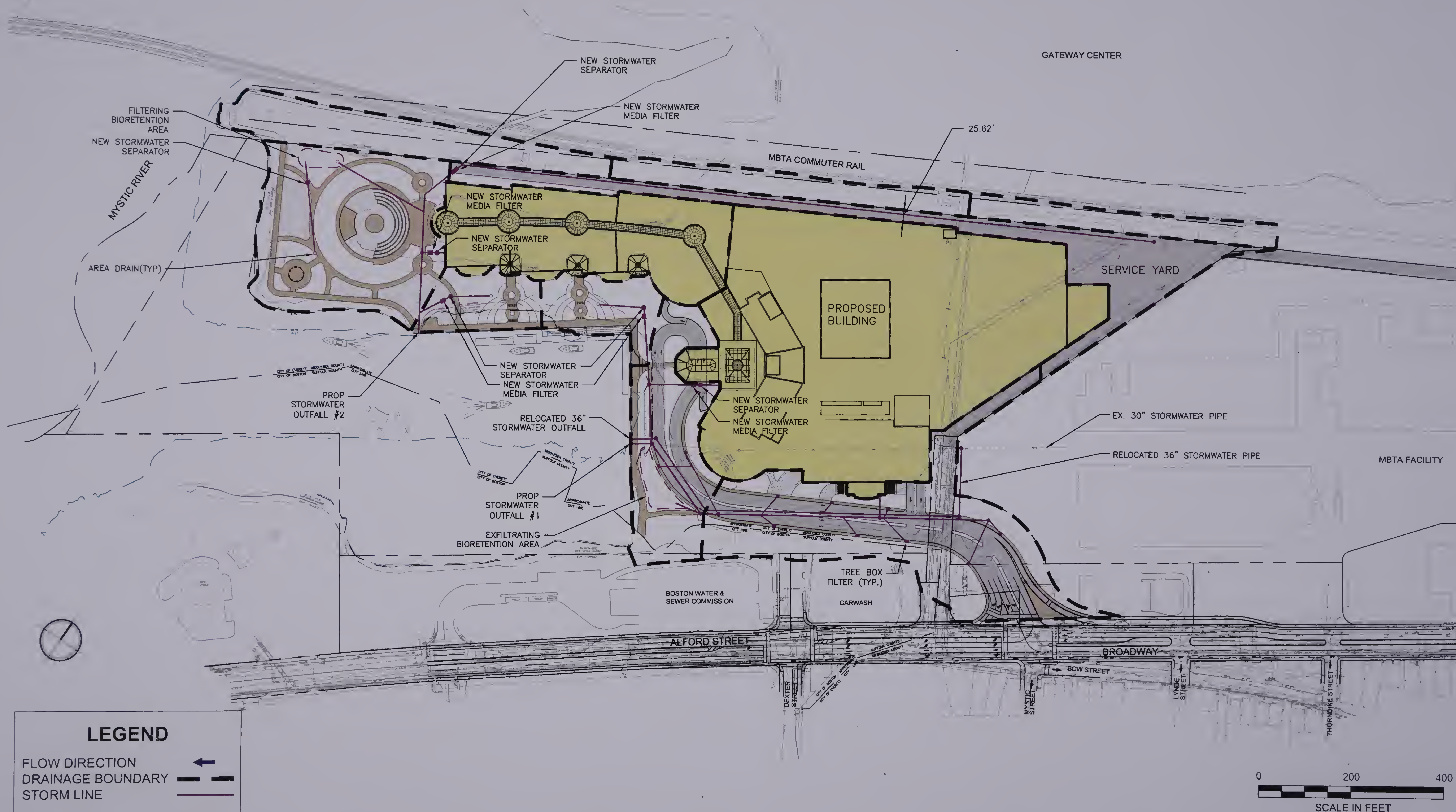

Figure 9-2
Proposed Stormwater System
Source: Howard/Stein-Hudson Associates, Inc., 2013

Figure 9-3
Santilli Circle Proposed Improvements
Source: Howard/Stein-Hudson Associates, Inc., 2013

Chapter 10

GROUNDWATER

CHAPTER 10: GROUNDWATER

10.1 GROUNDWATER

Groundwater levels measured in wells on the Project Site between 2005 and the present ranged from between approximately 4 and 11 feet below existing grade, corresponding to elevations ranging from +6 to -1 feet (NAV88). Groundwater levels over at least a portion of the Project Site are impacted by fluctuations related to the adjacent tidally-influenced Mystic River. In addition, fluctuations in groundwater levels will occur due to variations in precipitation, temperature, season and other factors different from those existing at the time the measurements were made.

It will be important to maintain area groundwater levels during construction to limit dewatering discharge and potential impacts on adjacent utilities and structures. As discussed below, the Project is not anticipated to have a long-term impact on groundwater levels since there will be no permanent pumping. As described in Chapter 12, Solid and Hazardous Wastes, remedial actions on the upland portion of the Project Site are anticipated to result in an improvement in the quality of groundwater entering the Mystic River.

The Project involves an underground parking garage requiring excavation to a depth of 35-40 feet below grade. This garage will be waterproofed and designed to resist hydrostatic (water) uplift pressures so that permenant, long term dewatering is not required. The remainder of the proposed developed (the retail area on the peninsula) will be constructed with a first floor elevation of approximately 12.4 feet, which is above the current 100-year flood elevation of 9.0 feet. This floor elevation also accounts for potential future sea level rise as described in Chapter 6, Greenhouse Gas and Sustainable Development.

Dewatering will be required during construction. Steel sheet piling is currently envisioned for temporary excavation support. The steel sheeting will reduce potential construction dewatering, as compared to traditional soldier pile and lagging, since it will reduce groundwater flow into the excavation from the upper, contaminated soil zone. However, some dewatering will still be required for the garage excavation and for foundation and utility construction outside of the garage area due to precipitation directly into the excavation and groundwater flow into the bottom of the excavation from the deeper soils. A Remediation General Permit (RGP) for the discharge of water pumped from the excavation will be obtained under the NPDES program. The permit will outline applicable discharge standards and the discharge monitoring required. Water pumped from the excavations during construction will be treated as required to meet discharge standards prior to discharge to surface water.

Chapter 11

Geotechnical

CHAPTER 11: GEOTECHNICAL

11.1 GEOTECHNICAL

Subsurface soil conditions at the Project Site generally consist of the following soil strata with increasing depth: fill, estuarine/organic silt, sand, clay, sand and gravel outwash deposits, glacial till and bedrock. However, subsurface conditions vary significantly across the Project Site, with the thickest organic silt deposits and deepest glacial till deposits generally on the southwest side. The sand and gravel outwash deposit above the glacial till was only observed towards the center of the Project Site. The approximate thickness and the depth to the top of each soil stratum are summarized in Table 11-1, General Soil Conditions.

Table 11-1 General Soil Conditions

General Description	Approximate Thickness of Stratum (feet)	Approximate Depth to Top of Stratum (feet)
Fill	6 to 18	-
Estuarine/Organic Silt	0 to 30	6 to 18
Sand	0 to 6	8 to 43
Clay	0 to 20	11 to 46
Sand and Gravel Outwash	0 to 32	37 to 66
Glacial Till	28 to 68	22 to 72
Bedrock	-	47 to 100

The proposed main building in the northern portion of the Project Site, housing the casino and hotel, is expected to be a multi-story tower with underground parking requiring excavation to a depth of about 35 to 40 feet below grade. The proposed retail building on the peninsula to the south is proposed to be one story with no basement. These varied building geometries and sizes, in conjunction with the varying subsurface conditions, will result in varied foundation types across the Project Site.

A mat foundation bearing in the clay, sand and gravel outwash or glacial till deposits is currently planned for the support of the main building and the below grade garage. A heavily-reinforced concrete mat slab foundation design is efficient where the slab needs to resist hydraulic uplift (water pressures) and building loads are relatively high (e.g., from a multi-story building), as the loads need to be spread out to limit bearing pressures. Drilled rock-socketed shafts are anticipated to supplement the mat foundation for support of the

hotel tower. Tiedowns may be required in areas to provide additional resistance to uplift pressures.

Temporary lateral earth support is required for the construction of the proposed underground garage. Once construction is complete, groundwater levels are not anticipated to be impacted since the basement walls and mat slab will be designed for hydrostatic pressure and no long-term dewatering discharge is planned.

For the proposed one-story building on the peninsula to the south, deep foundation support will likely be required due to the presence of compressible organic and clay deposits and the depth of suitable bearing materials. The Proponent anticipates that driven steel piles will be selected to support the buildings. Depending on the design loads, the piles will be driven to end bearing conditions in either sand and gravel outwash, glacial till or bedrock. The piles will be designed to accommodate the corrosion that could occur due to the low pH conditions at the Project Site as discussed in Chapter 12, Solid and Hazardous Wastes. The piles are expected to be 40 to 80 feet in length. It is anticipated that the first floor slab level will be a reinforced structural slab.

Means and methods for pile installation will consider potential impacts to adjacent structures, and vibration monitoring will be conducted during pile-driving. However, it is not anticipated that vibrations will approach thresholds that would impact existing structures on nearby properties.

Chapter 12

SOLID AND HAZARDOUS WASTES

CHAPTER 12: SOLID AND HAZARDOUS WASTES

12.1 SOLID AND HAZARDOUS WASTES

12.1.1 MASSACHUSETTS CONTINGENCY PLAN

Investigations conducted between 1995 and 2013 at the Everett Staging Yard Disposal Site (as that term is defined in the Massachusetts Oil and Hazardous Material Release Prevention and Response Act, Massachusetts General Laws Chapter 21E, and its implementing regulations known as the Massachusetts Contingency Plan (the "MCP")) have identified contamination in soil, groundwater, and sediments, including metals, volatile organic compounds (VOCs), volatile petroleum hydrocarbon (VPH) fractions and target analytes, semi-volatile organic compounds (SVOCs), extractable petroleum hydrocarbon (EPH) fractions and target analytes, and polychlorinated biphenyls (PCBs). The Disposal Site includes the land and water portions of the Project Site.[1] The sources of contamination at the Disposal Site include past industrial operations, leakage from a former above-ground storage tank (AST), and the placement of contaminated fill. Contamination in sediment at the Project Site may also be attributable, in part, to discharges to the Mystic River unrelated to the Disposal Site.

According to historic reports, the Project Site was occupied by the Cochran Chemical Company, the Merrimac Chemical Company and the Monsanto Chemical Company from the late 1800s until the late 1960s. The buildings on the Project Site were razed in the 1970s. The Project Site has been used primarily as a material storage and staging yard since the mid-1990s, when rock and fine-grained sediment ("tunnel muck") from the construction of the Deer Island Outfall project was stockpiled on it. In 1999, the muck was spread across the Project Site in a 1- to 7-foot thick layer. There are currently no buildings at the Project Site except for a construction trailer.

The following sections describe the regulatory history of the Project Site under the MCP, the nature and extent of contamination as documented by investigations conducted to date, and the approach to addressing that contamination as proposed by the current owner of the Project Site.

[1] The Massachusetts Contingency Plan defines a Disposal Site as any "place or area... where oil and/or hazardous material has come to be located." The boundaries of a Disposal Site are not limited by property boundaries.

12.1.2 REGULATORY HISTORY

In 1995, Consulting Engineers and Scientists, Inc. (CES) of Lakeville, Massachusetts, performed a limited subsurface investigation at the Project Site prior to it being used as a stockpile location for excavated tunnel muck and rock from the Deer Island Outfall (Boston Harbor Secondary Treatment Facilities) project. Arsenic and lead concentrations in soil samples collected during the investigation exceeded the applicable MCP Reportable Concentrations (RCS-2). On January 18, 1996, O'Donnell Sand and Gravel ("O'Donnell"), the property owner at the time, submitted a Release Notification Form (RNF) to the Massachusetts Department of Environmental Protection (MassDEP). MassDEP assigned RTN 3-13341 to the release. Later in 1996, the excavated tunnel muck and rock were stockpiled and/or spread across the upland portion of the Project Site. In mid-1999, most of the tunnel muck was used to cap a separate portion of the former Monsanto property, located across the railroad tracks and west of the Project Site, as part of the construction of the Gateway Center Mall, although a 1- to 7-foot thick layer of the tunnel muck remains at the Project Site.

In December 1996, CES conducted a Phase I Initial Site Investigation (ISI). Arsenic and lead concentrations in soil exceeded the applicable RCS-2 standards, and dissolved arsenic and lead in groundwater exceeded the RCGW-2 standard. In January 1997, on behalf of O'Donnell, CES submitted a Phase I ISI and Tier Classification (Phase I report) to MassDEP. The Disposal Site, including the portion comprising the Project Site, was classified as a Tier II disposal site. The Phase I report identified arsenic, lead, and low pH as contaminants of concern (COCs). O'Donnell submitted a Phase II Extension Request to MassDEP in February 1999 and sold the property to Mystic Landing, LLC ("Mystic Landing") in 2001.

In 2001, on behalf of Mystic Landing, Rizzo Associates (a predecessor to Tetra Tech Rizzo, Inc. of Framingham, Massachusetts ("Tetra Tech Rizzo")) performed a limited subsurface investigation at the Project Site, including the collection of soil and groundwater samples. The findings of the subsurface investigation were similar to CES' findings. Between 2005 and 2007, Tetra Tech Rizzo conducted additional subsurface investigations, including the collection of additional soil, groundwater and sediment samples. The results of these investigations were also generally consistent with those from previous sampling rounds.

In December 2007, on behalf of Mystic Landing, Tetra Tech Rizzo submitted a Phase II Comprehensive Site Assessment (CSA) and Tier II Extension Request to MassDEP. The Human Health Risk Assessment included in Tetra Tech Rizzo's CSA concluded that there was No Significant Risk (NSR) and No Substantial Hazard associated with the current use of the Project Site as a construction material storage yard or for similar uses that did not disturb the surficial layer of tunnel muck.

In June and July 2007, Williams Environmental, Inc. ("Williams") conducted a supplemental subsurface investigation at the Project Site, including the excavation of 40 test pits and the collection of soil, groundwater and sediment samples. As with previous analyses of environmental media conducted at the Project Site, lead and arsenic were the contaminants detected at the highest concentrations and with the greatest frequency.

FBT Everett Realty, LLC ("FBT ") purchased the Project Site from Mystic Landing in October 2009. FBT met the criteria for an Eligible Person under the MCP, as set forth at 310 CMR 40.0570(3)2, and on February 11, 2010, GEI Consultants, Inc. ("GEI") submitted an Eligible Person Certification and Revised Tier Classification Submittal to MassDEP on behalf of FBT. The Disposal Site, including the Project Site, remained a Tier II disposal site and, pursuant to 310 CMR 40.0570, the deadlines for conducting response actions at the Disposal Site were re-established.

In February 2012, GEI submitted a new Phase II CSA which was based only on data previously developed by others, since GEI's access to the site was denied by the Project Site occupant at the time. As part of the Phase II, GEI conducted a Method 3 Risk Characterization. This Risk Characterization concluded that a Condition of NSR to human health existed at the Project Site for most of the then current uses of the Project Site, but that NSR could not be demonstrated for foreseeable future Project Site uses. NSR could not be demonstrated for future commercial workers or future visitors exposed to site-wide soils, for future construction workers exposed to site-wide soils or shallow groundwater, or for utility workers exposed to soil, shallow groundwater, or ambient air within a potential utility trench in a specific area near the northern corner of the Project Site.

Because of the delay in obtaining access to the Project Site, FBT filed a Notification of Delay with MassDEP, requesting that the deadline for the Phase III – Remedial Action Plan (RAP) be extended from February 2013 to June 2013, and that the deadline for the Phase IV – Remedy Implementation Plan (RIP) be extended from February 2014 to June 2014. FBT subsequently filed a second Notification of Delay requesting that the Phase III RAP deadline be extended to September 2013.

GEI conducted additional soil and groundwater investigations in December 2012 and March 2013. These investigations included the installation of a series of soil borings and monitoring wells on the upland portion of the Project Site, and the

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[2] Briefly, an Eligible Person is an owner or operator of a disposal site who did not cause or contribute to the release and did not own or operate the site at the time of the release. An Eligible Person who is required or intends to conduct response actions at a disposal site, and who has not previously submitted a Tier I Permit Application or Tier II Classification Submittal for the disposal site, may seek to re-establish the deadlines for response actions.

collection and analysis of soil and groundwater samples. The results of the additional investigations were generally consistent with those previously documented. GEI also conducted a bench scale evaluation of in-situ solidification/stabilization (ISS) of soils as a remedial alternative for certain areas of the Project Site. On August 30, 2013, FBT filed a Phase III RAP for the Project Site outlining the selected Remedial Action Alternatives.

12.1.3 NATURE AND EXTENT OF CONTAMINATION

Soil

The soil contamination at the Project Site is attributable to historical operations at the Project Site, including filling. PAHs and metals are present in fill that extends across the Project Site. Consequently, the extent of soil contamination is defined areally as the upland portion of the Project Site. The highest levels of contamination are generally encountered at a depth of approximately 8 to 12 feet below ground surface, within the fill layer below the tunnel muck. Contaminant concentrations in surficial soil samples were highest in areas of the Project Site where the tunnel muck was thinnest (approximately 1 foot deep). The tunnel muck in these areas most likely mixed with the underlying contaminated fill.

MCP Upper Concentration Limits (UCLs) for arsenic and lead were exceeded in several soil samples. UCLs for extractable petroleum hydrocarbons (EPH) were exceeded in samples from one boring (RIZ-4) in the central portion of the Project Site. Visual and olfactory evidence of contamination in soil generally consisted of fill containing wood, brick, glass, ash, asphalt and solid tar-like material; strong odors (including petroleum-like, coal tar-like or creosote-like odors); and unnaturally colored soils (red, green, maroon, yellow or white). Red and green colors observed in the soil may be related to the prior storage of sulfur and production of sulfuric acid at the Project Site.

Groundwater

Dissolved metals contamination in shallow groundwater is also present across the Project Site, with concentrations of dissolved arsenic and lead in groundwater exceeding the UCL in groundwater samples obtained from several wells. The highest concentrations of lead in groundwater were measured in monitoring wells located on the southwestern portion of the Project Site, corresponding to areas with low groundwater pH. The pH of groundwater in this area of the Project Site has been measured to be as low as 1.86. This portion of the Project Site is associated with the historical storage and processing of ferric sulfate and sulfuric acid.

Petroleum-related contamination has been identified in the central portion of the Project Site. This contamination is most likely the result of a localized release of crude oil from an 80,000-gallon above-ground storage tank formerly located in that

area. Elevated PAHs in soil are likely attributable to ash and cinders within the fill at the Project Site and/or residual contamination resulting from the former storage of crude oil.

Sediments

Contamination has been identified in the sediments in the water portion of the Project Site. In August 2013, a sediment sampling and analysis program was conducted within the cove portion of the Project Site, in the area at and just east of the mouth of the cove, and east of the Project Site peninsula. The highest sediment contamination concentrations were measured in the cove on the Project Site. Based on the decreasing concentrations of contaminants detected in sediment samples collected at the outer edge of the cove, toward the center of the Mystic River, the extent of sediment contamination attributable to the Disposal Site does not appear to extend substantially beyond the Disposal Site.

At least some of the sediment contamination on the Project Site is likely attributable to sources outside the Disposal Site. For example, PCBs were detected in sediment samples obtained from the cove on the Project Site at concentrations as high as 113 mg/kg, while the highest total PCB concentration detected in upland soils on the Project Site was 3.9 mg/kg in one sample (all other total PCB concentrations in upland soils were below 1 mg/kg).

Surface Water

A surface water investigation conducted in 2006 by Menzie Cura Associates indicated that the Disposal Site had not significantly or negatively impacted surface water with respect to temperature, conductivity, dissolved oxygen or pH. However, this study did not include analyses of surface water for dissolved metals.

12.1.4 MCP COMPLIANCE

In connection with the development of the Project, the contamination resulting from historic releases of oil and hazardous material at and from the Project Site will be addressed, in compliance with all applicable laws and regulations, to make the property safe for all proposed hotel, casino, retail and public waterfront access uses. A Response Action Outcome will be achieved with respect to releases of Oil and Hazardous Materials at and from the Project Site, including a Permanent Solution at the upland portion of the Project Site. (The Proponent is an Eligible Person, and could submit a new Tier II Classification Submittal in order to reestablish regulatory deadlines in accordance with 310 CMR 40.0570, consistent with its development and construction schedules.) During construction, the excavation and handling of contaminated soil, groundwater, and sediment will comply with the relevant provisions of the MCP and other applicable state and federal regulations.

The Phase III report presents a detailed analysis of potential comprehensive response actions to address contamination at and from the Project Site. As specified in the MCP, these alternatives were evaluated based on several factors, including their comparative effectiveness; short-term and long-term reliability; difficulty of implementation; costs, risks, benefits; and timeliness in eliminating any uncontrolled sources of contamination and achieving a level of No Significant Risk. The Proponent anticipates that the response actions to be taken at the Project Site will include the in-situ solidification/stabilization (ISS) of contaminated soil in some areas and the excavation and off-site disposal of contaminated soil from other areas.

In the areas where ISS will be employed, it will reduce the solubility and biological availability of contaminants of concern in the soil, increase the pH of groundwater (which will reduce the leaching of contaminants from soil below the groundwater table), and reduce soil permeability (the ability of site soils to transmit groundwater). The implementation of a combination of ISS, soil excavation and off-site disposal, and the implementation and maintenance of appropriate Activity and Use Limitations, is expected to achieve a Permanent Solution under the MCP respecting contamination on the land portion of the Project. These response actions will also decrease the potential for continued contamination of the water portion of the Project Site.

Contaminated soils requiring off-site disposal will be characterized, handled and transported in accordance with the MCP and other applicable local, State and Federal requirements. Dewatering is anticipated during excavation activities, and an excavation dewatering plan will be implemented to properly manage groundwater so that conditions at the Project Site are not exacerbated. A discussed above, a Remediation General Permit (RGP) will be obtained prior to the discharge of pumped water. During all activities requiring the excavation of soils at the Project Site, both work zone and perimeter real-time dust monitoring will be conducted. Institutional controls will be put in place to limit exposure to impacted soils remaining at the Project Site after redevelopment.

Chapter 13

WASTEWATER

CHAPTER 13: WASTEWATER

This Chapter describes the existing sanitary sewer system serving the Project Site, the Project's proposed sanitary sewer infrastructure, the estimated wastewater impacts for the Project and potential mitigation for Project-related wastewater flows.

13.1 EXISTING SANITARY SEWER SYSTEM

Unlike many urban locations, Everett has separate, not combined, systems for the sanitary sewers and storm drains. Everett operates and maintains a system of sewers throughout the city. Sewage treatment is provided by the Massachusetts Water Resources Authority (MWRA) at the Deer Island Wastewater Treatment Plant.

Record plans from Everett's Engineering Division and the MWRA indicate an existing city-owned 32″x36″ sanitary sewer in Broadway (Route 99) adjacent to the Project Site. This sanitary sewer carries a significant portion of the sewage from residential areas of Everett north of Route 16. This sanitary sewer continues southeasterly in Mystic Street, southwesterly in Robin Street and northwesterly in Dexter Street until it ties into the Cambridge Branch of the MWRA's Metro Sewer just downstream of the MWRA DeLauri Pump Station. The Metro Sewer continues to Chelsea Creek Headworks and ultimately to the Deer Island Wastewater Treatment Plant. Plans also show a 6-inch sanitary sewer in Horizon Way within the Project Site that ties into a 10-inch sanitary sewer in Broadway, which continues southwesterly in Broadway until tying into the Metro Sewer, Cambridge Branch. See Figure 13-1, Existing Sewer System.

13.2 PROPOSED SANITARY SEWER SYSTEM CONNECTION AND GENERATION

Wastewater design flows were calculated for the Project using the preliminary facility program. The preliminary facility program describes the respective number of seats, number of hotel rooms and square footage of facility areas. From these descriptions and quantities, unit wastewater design flows in gallons per day per unit are assigned based on 314 CMR 7.00: Sewer System Extension and Connection Permit Program, 310 CMR 15.00: The State Enviornmental Code, Title 5, engineering practice, and comparisons to similar facilities. The calculation estimating the maximum daily wastewater flow from the Project is provided in Table 13-1, Estimated Wastewater Flow. The Project will generate an estimated 228,428 gallons per day (gpd) of wastewater. Please note that these estimates are based on outdated design flows contained in the State Environmental Code which has not been updated to reflect current water conserving technologies. With the significant water conservation measures included in the project design in order comply with the state

sanitary code and to achieve LEED Gold or Platinum ratings, the actual flows will be substantially less than projected below in Table 13-1.

The sanitary sewer lateral from the Project is expected to connect to the existing 32"x36" sanitary sewer in Broadway that is owned and maintained by Everett. See Figure 13-2, Conceptual Utility Plan. This sanitary sewer has a flow full capacity of approximately 5.8 million gallons per day ("MGD") based on a slope of 0.00025 foot/foot. The Project will generate a maximum daily flow of 0.23 MGD (4% of the pipe capacity) with an expected peak hour flow of 0.46 MGD (8% of the pipe capacity).

The sewer connection will be reviewed and approved locally by Everett's Engineering Division. Grease traps to treat kitchen wastewater flows, in compliance with local and state regulations, will be installed and maintained. Gas and oil separators, in compliance with 360 CMR 10.000 and all other applicable laws, will be provided to treat flow from the parking structure floor drains prior to connection into the sanitary sewer system.

Table 13-1 Estimated Wastewater Flow

Use	Unit Flow Rate	The Project	
		Quantity	Estimated Maximum Daily Flow
Gaming Position (1)	20 gpd/seat (1)	3,822 seats (2)	76,440 gpd
Hotel	110 gpd/room	500 rooms	55,000 gpd
Restaurant	35 gpd/seat	1,173 seats (2)	41,055 gpd
Convention Space (3)	15 gpd/seat (3)	1,996 seats (4)	29,940 gpd
Retail	0.05 gpd/sf	70,289 sf (5)	3,514 gpd
Fitness/Spa (6)	20 gpd/locker (6)	262 lockers (7)	5,240 gpd
Nightclub (8)	3 gpd/seat (8)	1,766 seats (9)	5,298 gpd
Front of House & Back of House (10)	0.075 gpd/sf (10)	159,217 sf (11)	11,941 gpd
Total		228,428 gpd	

Notes:

(1) Lounge, Tavern flow of 20 gpd/seat for Casino Gaming Position based on use and as determined by Engineer.
(2) Based on Building Program
(3) Function Hall flow of 15 gpd/seat for Convention Space based on use and as determined by Engineer.
(4) Based on Building Program, Convention Area includes 1 Grand Ballroom, 3 Meeting Rooms, and 2 Board Rooms. From International Building Code (IBC) Table 1004.1.1 Maximum Floor Area Allowances per Occupant. Assume 15 nsf per occupant with table and chairs in assembly without fixed seats.
(5) Retail Area (Net Leasable) from the Building Program includes Hotel Retail.
(6) Country Club, Lockers and Showers, 20 gpd/locker for Fitness/Spa based on use and as determined by Engineer.
(7) From IBC Table 1004.1.1 Maximum Floor Area Allowances per Occupant. Assume 50 gsf and 262 lockers per occupant.
(8) Theatre/Auditorium flow of 3 gpd/seat for Nightclub based on use and as determined by Engineer.
(9) From IBC Table 1004.1.1 Maximum Floor Area Allowances per Occupant. Assume 5 nsf per occupant in assembly without fixed seats. Based on Building Program, assume 1,766 seats.
(10) Use Office Building, 0.075 gpd/sf for Front of House and Back of House support space based on use and as determined by Engineer.
(11) From Building Program for Front of House (FOH) and Back of House (BOH) support spaces

13.3 PROPOSED SANITARY SEWER SYSTEM MITIGATION

In compliance with MassDEP Sewer Policy BRP 09-01, the Project will provide mitigation to offset new sewer flows. Based on discussions with Everett and the MWRA, two alternative mitigation plans are suggested below.

In the first alternative, the Proponent will offset the new wastewater flows from the Project by the removal of infiltration/inflow (I/I) on a 4:1 basis of 4 gallons removed for every gallon generated. The Proponent will work with Everett to develop a program to remove flows from the sanitary sewer system equal to four times the projected Project sewer flows. Everett has an ongoing program to detect and eliminate sources of extraneous flows. The extraneous flows are related to illicit storm water and sump pump connections and failing infrastructure (e.g., pipes in disrepair or with open joints). Everett has a current list of recommended sewer rehabilitation projects for portions of the sanitary sewer in various sections of the city. The rehabilitation projects include cleaning and sealing pipes, applying root control treatment, replacing pipes, lining existing pipes and sealing manholes. The Project could fund some of these projects as well as provide funds to study and mitigate other sections of the City not included in the current survey of the sanitary sewer system. While this program would reduce the volume of flows going to the Deer Island WWT and comply with the MassDEP policy, it may not actually reduce sewer overflows into the Mystic River, improve Mystic River water quality, nor help to achieve the reductions anticipated through the pending draft Bacteria TMDL.

As an alternative to the above mitigation program, the Proponent is also considering a more regional mitigation approach. With respect to the regional MWRA sewer system, most sanitary flows generated in Everett are carried by one of three pipes over Section 193 (a 126″ diameter pipe) of MWRA's North Metro Relief Sewer near Sweetser Circle. These flows tie into Everett's 32″x36″ sanitary sewer in Broadway. This pipe continues in a southwesterly direction and ultimately ties into the Cambridge Branch of the MWRA's Metro Sewer (an 80″x72″ culvert) just downstream of the DeLauri Pump Station and about 450 feet southwesterly of the Project Site. This sewer routing has a couple of apparent drawbacks. A majority of Everett's sanitary sewer flows tie into the Cambridge Branch Sewer, which has less capacity than the North Metro Relief Sewer, and the flows join the MWRA's system just downstream of the DeLauri Pump Station possibly impeding the pump station's flows.

The MWRA sewer system serving the communities of Somerville, Charlestown and East Cambridge leads into the DeLauri Pump Station and then into the Cambridge Branch Sewer though Everett. There are several Combined Sewer Overflows upstream of the Pump Station that can discharge into the Mystic River when the DeLauri Pump Station is not able to keep up with the flow. According to the MWRA, the lack of downstream capacity of the Cambridge Branch Sewer during wet weather flows can reduce the efficacy of the pump station and resulting in overflows into the Mystic River.

The Proponent is working with the MWRA and Everett to determine if modifications to the existing Everett sanitary sewer system can be made that would direct a majority of the city's sanitary sewer flows into Section 193 of the North Metro Relief Sewer where the sewer main crosses over the Relief Sewer before heading down Broadway toward the Pump Station. These modifications will not only divert significant flows out of the Cambridge Branch Sewer, but preliminary modeling suggests that this improvement will lower the hydraulic grade line in the Cambridge Branch Sewer while having a minimal effect on the North Metro Relief Sewer. This could result in improved pumping capacity at the DeLauri Pump Station and reduced combined sewer overflows from Charlestown, Somerville and East Cambridge into the Mystic River.

The Proponent will continue to explore these mitigation approaches with Everett, the MWRA and MassDEP to determine the feasibility and efficacy of each alternative approach.

Figure 13-1
Existing Sewer System
Source: MWRA, 2013

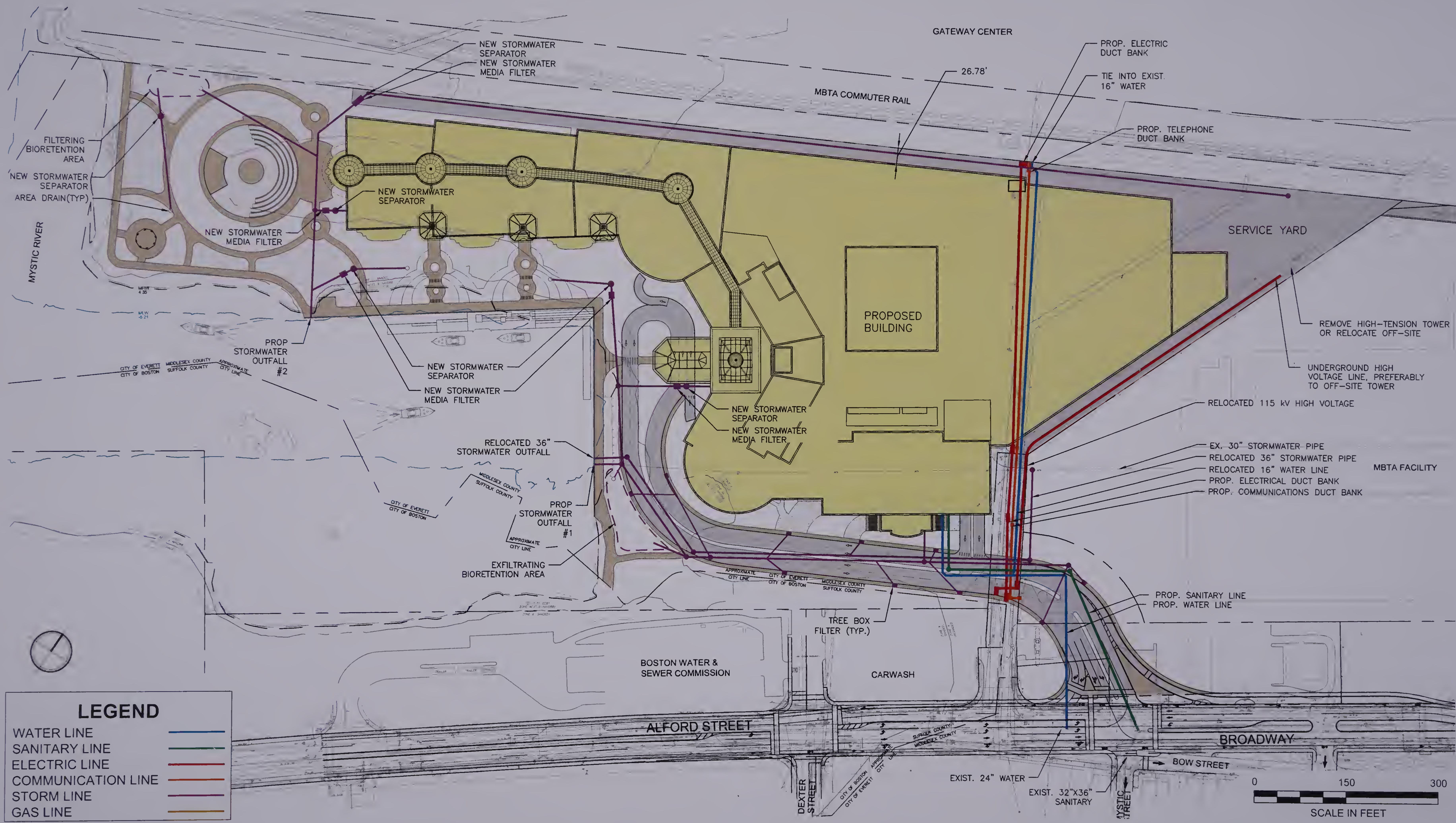


Figure 13-2
Conceptual Utility Plan
Source: Howard/Stein-Hudson Associates, Inc., 2013

Chapter 14

WATER SUPPLY

CHAPTER 14: WATER SUPPLY

This Chapter describes the existing water supply system serving the Project Site, the proposed water supply infrastructure for the Project, and projected water use impacts for the Project.

14.1 EXISTING WATER SUPPLY

Everett's water is provided by the MWRA from the Quabbin and Wachusett reservoirs with treatment at the John J. Carroll Water Treatment Plant. Everett's water distribution system services the public. Record plans obtained from Everett's Engineering Division show potable water for the facilities along Horizon Way (a.k.a. Chemical Lane) is provided by service connections to an existing 24-inch public water main owned by the Everett in Route 99. The plans show 6-inch, 8-inch, and 14-inch lines in Horizon Way within Everett jurisdiction. The current condition and existence of these service laterals is unknown.

In 2001, a private 16-inch water main connected to the 24-inch public water main was installed in Horizon Lane and runs through the Project Site to service the Gateway Center located north of the MBTA commuter rail tracks. This 16-inch water line will be relaid under the proposed Project buildings. See Figure 14-1, Existing Water System and Figure 14-2, Conceptual Utility Plan.

At the Proponent's request, Commercial Construction Consulting, Inc. conducted a hydrant flow test at two hydrants located along Broadway on August 13, 2013. Everett Department of Public Works record flow test data for hydrant flow and pressure in the Project vicinity were not available. The flow hydrant is located just south of Horizon Way and the test hydrant is located to the north. See Figure 14-1, Existing Water System. Results of these tests are provided in Table 14-1.

Table 14-1, Existing Hydrant Flow Data

Hydrant Location	Static Pressure (psi)	Residual Pressure (psi)	Pitot Pessure (psi)	Total Flow (gpm)	Outlet Size (inches)	Flow @ 20 psi (gpm)
38 and 192 Broadway	68	64	40	1,061.6	2.5	4,067.2

Water capacity within the existing system appears ample to supply the Project, and no problems or adverse system impacts are anticipated within the existing system as a result of Project construction and operation. However, the design team will evaluate hourly peak flows as well as maximum daily flows as the Project design progresses.

14.2 PROPOSED WATER SUPPLY DEMAND AND CONNECTION

The domestic water demands are calculated from the estimated wastewater flows. It is assumed that 10% of water used is lost to consumption and other factors and does not become part of the wastewater flow. The maximum daily water demand for the Project is estimated to be 251,271 gpd (174 gpm). The maximum daily water demand is provided in Table 14-2, Estimated Maximum Daily Water Demand.

Everett will provide potable water to the Project. Everett's Engineering Division reviews and approves all plans to construct, extend or connect to the municipal water system. Water service can be provided from the existing 24-inch water main in Route 99 which should have adequate capacity to support the development. A new water service connection to the existing 24-inch water main will be required for the Project's domestic and fire protection services. See Figure 14-2, Conceptual Utility Plan.

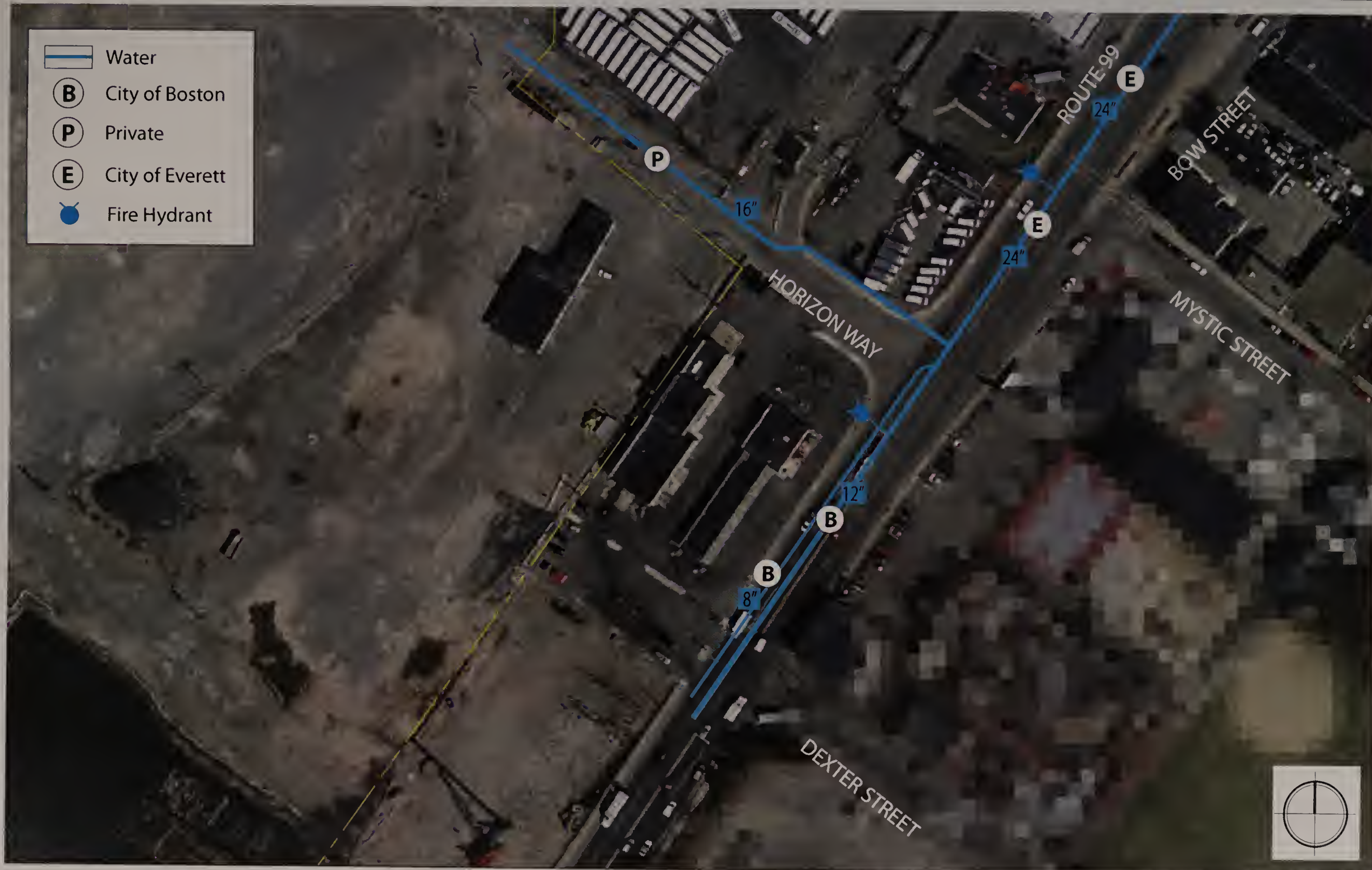
Table 14-2, Estimated Maximum Daily Water Demand (gallons per day)

Water Demand	The Project
Maximum Daily Water Demand	251,271 gpd

14.3 PROPOSED WATER SUPPLY CONSERVATION AND MITIGATION MEASURES

The Project building will be designed to be certifiable under the Green Building Council Leadership in Energy and Environmental Design (LEED) rating of Gold or higher. To help conserve water, the Project will use water-efficient plumbing fixtures, low-flow lavatory faucets, and low-flow showerheads. The Project will also include the reduction of water use through the use of rainwater harvesting for irrigation use, gray water reuse, and installing alternatives to natural turf landscaping. See Chapter 6, Greenhouse Gas and Sustainable Development for additional discussion of water conservation and mitigation measures.

Extensive landscaping including a four-season atrium garden is planned for the Project. Therefore, timers, soil moisture indicators and rainfall sensors in in-ground irrigation systems and rainwater harvesting will be installed to reduce potable water usage.



Not to scale.

Figure 14-1
Existing Water System
Source: *Howard/Stein-Hudson Associates, Inc., 2013*

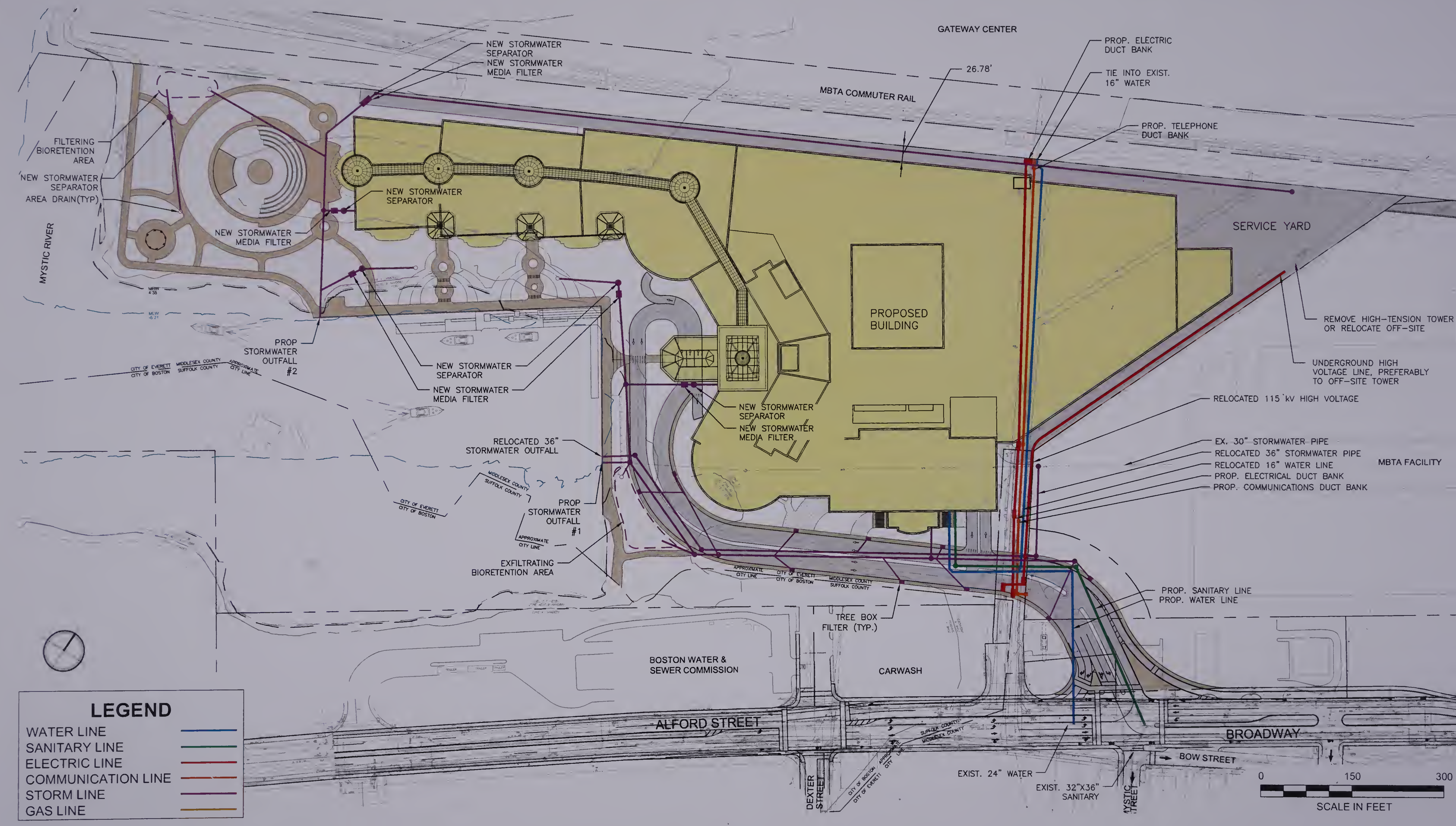


Figure 14-2
Conceptual Utility Plan
Source: Howard/Stein-Hudson Associates, Inc., 2013

Chapter 15

Construction Management

CHAPTER 15: CONSTRUCTION MANAGEMENT

This chapter outlines the proposed construction schedule and identifies the general scope and sequence of environmentally-related activities to be performed for the development of the Project Site. It provides an evaluation of the potential construction period impacts associated with the development of the Project and ancillary facilities, and identifies the measures that will be taken to avoid, minimize and mitigate construction-related impacts on the Project Site, on adjacent roadways and on adjacent land. A site-specific Construction Management Plan ("CMP") will be prepared for the Project that will provide more details on these topics. The CMP is addressed in Section 15.2.11.

15.1 CONSTRUCTION SCHEDULE AND APPROACH

Construction of the Project is expected to be completed in approximately 36 months. The entire Project is proposed to be constructed in one continuous phase to avoid the delays, costs and environmental impacts of multiple mobilizations and demobilizations. Construction of the Project would begin late in 2014 and be completed in 2017.

The Construction Manager for the Project will provide a detailed Construction Management Plan prior to commencing construction on the Project Site. This will include discussion of the responsibilities of the Construction Manager and how subcontractors will be managed.

In addition to the on-site construction, the Proponent will be responsible, whether in full or in-part, for off-site mitigation work, including utility work and transportation improvements. Off-site transportation improvements are described in Chapter 4. Many of the off-site transportation improvements will require coordination with local, state and federal agencies. Detailed traffic management plans will be required as part of those off-site improvements and will be provided during the required plan review stages.

15.2 CONSTRUCTION METHODOLOGY

15.2.1 ON-SITE WORK

Waterfront Construction and Site Preparation

Waterfront construction consists of the stabilization of the existing shoreline by filling, the installation of steel bulkheads and sheeting walls and plantings to create a living shoreline. The work also includes dredging to provide ample water depth for the installation of new floats, gangways and ramps that will provide land and water access for recreational and water transportation vessels. The shoreline will have a harborwalk that will provide pedestrian linkage and access to the waterfront facilities.

The overall anticipated sequence of work within the waterfront, shoreline, and coastal resources will be as follows:

1. Channel dredging;
2. Bulkhead and sheeting walls, with any structural grading along the shoreline;
3. Construction of the floating dock, pier and adjacent walkway;
4. Removal and replacement of unsuitable soil, sediment and structural materials in support of the "Living Shoreline" and oyster/clam bed mitigation areas;
5. Installation of "Living Shoreline" plantings; and
6. Completion of harborwalk and adjacent landscaping.

The above sequence anticipates that the dredging work needs to precede the shoreline work to avoid and minimize logistical conflicts. While the dock, pier and adjacent walkway can precede the "Living shoreline" work, the harborwalk completion must be delayed to allow the completion of the Living Shoreline work to avoid the need to cross the completed harborwalk with construction equipment. Some additional phasing between the dredging and construction of the bulkhead structures will be required within areas where the dredging occurs directly adjacent to the new structures.

All of these work elements are either within or adjacent to coastal wetland resources. All such work will be implemented with appropriate turbidity and erosion/sedimentation controls, including turbidity curtains, silt fence and fiber rolls. Because hazardous substances are known to be present in the sediment in some areas, all excavated sediment will be managed and disposed of in accordance with applicable environmental regulations under the direction of a Licensed Site Professional. Time of year restrictions on the construction schedule will apply for all in-water work as mitigation for fisheries concerns (see Section 15.4.5).

Site Grading and Construction of Below-grade Parking Garage

Given the condensed construction schedule, on-site remediation of soil is expected to commence prior to overall site construction. The Project Site is classified Tier II pursuant to the Massachusetts Contingency Plan (310 CMR 20.0500). As such, any remediation will be in accordance with the Massachusetts Contingency Plan.

This anticipated remediation program will require approximately 6 months, during which time the construction of the hotel tower and underground parking garage will

begin. Once remediation is complete, the peninsula will be used, in part, as a laydown area to facilitate the construction of the hotel and garage.

After the removal of the existing on-site soil piles and clearing and grubbing of the Project Site, several site activities will be underway concurrently. The major initial site construction activities include:

- Site utility relocation required to move existing utilities out of the proposed building footprint;
- Foundation excavation for the underground garage; and
- Drilled shaft installation for the hotel.

The hotel foundations may be isolated from the garage, to allow the above grade hotel construction to proceed prior to completing the below grade garage. Garage construction will require the excavation of approximately 120,000 cy of soil. The soils will be pre-characterized for reuse or disposal to allow for "load-and-go," thus limiting on-site stockpiles. It is anticipated that soil will be transported off-site to either a point of reuse or to a licensed disposal facility using a truck transport. However, consideration will be given to barge and/or train transport, depending on access to appropriate loading points and the location of the reuse/disposal facility. The hotel and below-grade garage construction are expected to require approximately twenty and sixteen months, respectively.

It is expected that the retail building will be the last building to be started since, compared to the garage and hotel, it will require less time to complete. The retail building construction will require pile driving, but excavation and backfilling will generally be limited to shallow excavations for pile caps and utilities.

Earthwork activities will be performed in accordance with a Release Abatement Measure Plan (the "RAM Plan") submitted to MassDEP prior to the start of construction. The RAM Plan will outline procedures for on-site soil management and offsite disposal, groundwater treatment and discharge, and environmental monitoring. As discussed in Section 10, Groundwater, a Remediation General Permit (RGP) will be required for the discharge of groundwater pumped during construction.

Building Construction

Once the underground infrastructure and below-grade garage have been constructed, construction of the buildings above grade will commence.

15.2.2 OFF-SITE TRAFFIC IMPROVEMENTS

The construction of off-site traffic mitigation will be governed by the requirements of MassDOT, DCR, and/or the municipality in which the improvements are sited. The need to mitigate construction traffic will be a priority. Tactics will include some phased starting of trades to off-peak hours, off-site parking and bussing to the site, MBTA bussing, and marine transport. Utilization of lean building practices will be used to maximize off-site prefabrication. Separate construction staging and traffic management plans will be developed for these improvements as part of their respective construction bid documents. Those plans will meet all the requirements of the state agencies and municipalities.

15.2.3 UTILITY IMPROVEMENTS

Utility relocations will commence after erosion and sediment controls have been installed, soil piles have been removed and clearing and grubbing of the Project Site has been completed. The relocated utilities to Gateway Center, which include water, electrical and communications, will be coordinated with the foundations of the garage. Existing utility tunnels under the MBTA Commuter Rail are anticipated to be reused to minimize disruption to rail service and operation.

The construction of utilities servicing the Project primarily takes place on-site. Connections to the water main and sanitary sewer in Broadway will occur during off-peak hours. The stormwater management system will be functional prior to installing binder course in the service area or entry drive. Potential impacts and mitigation will be detailed in the Construction Management Plan.

15.2.4 AIR QUALITY

Ongoing construction activities have the potential to generate fugitive dust. Fugitive dust emissions during construction activities can be associated with land clearing, stockpiling, drilling and blasting, ground excavation, cut and fill operations (i.e., earth moving) or traffic on temporary paved and unpaved roads and construction areas. Emissions from a construction site can be expected to have a definable beginning and end, and to vary substantially over different phases of the construction process. This is in contrast to most other fugitive dust sources where emissions are either relatively steady, or follow a discernible annual cycle.

Construction site dust control measures are readily available and well known. In the present case, the contractors will implement dust control measures during active construction. The selection of specific dust control measures will be activity-dependent, but the following types of control measures will be implemented:

- Road and construction area watering;
- Chemical stabilization;
- Sand fencing – wind speed control;
- Perimeter sprinklers;
- Tire washing stations;
- On-site speed controls;
- Covered stockpiles; and
- Street sweeping.

Additional Air Quality measures will include low sulphur diesel in construction equipment to reduce air emissions, retrofit equipment as needed to reduce emissions, prohibit excessive idling (per 310 CMR 7.11) to reduce emissions.

If on-site material crushing activities will take place, appropriate notifications will be made at least 30 days prior to the commencement of such activities to local officials and to MassDEP in accordance with 310 CMR 16.05(3)(e)(6).

15.2.5 NOISE

Every reasonable effort will be made to minimize the impacts of noise during construction activities. Construction work will comply with MassDEP Noise Control Regulations, 310 CMR 7.10 and the City of Everett ordinances.

Mitigation measures will include:

- Instituting a program that includes allowable construction timeframes to ensure compliance with the local requirements;
- Locating stationary noise sources, including staging areas, as far from noise-sensitive receptors as possible;
- Constructing artificial or using natural barriers to shield construction noise;
- Combining noisy operations to occur in the same time period (the total noise level produced will not be substantially greater than the level produced if the operations were performed separately);
- Using properly maintained equipment mufflers and providing enclosures on equipment operating continuously;
- Turning off idling equipment;
- Using quieter alternatives for equipment where feasible;

- Selecting a quieter construction operation and technique where feasible; and
- Monitoring noise levels during the construction period to demonstrate compliance.

15.2.6 BLASTING AND VIBRATION

Blasting is not anticipated to be required for the Project. However, there will be construction-induced vibrations, mainly from the pile driving for the retail building. Project specifications will include vibration limits to avoid potential damage to nearby utilities, buildings, and the adjacent rail line. If necessary to reduce vibration levels, pile locations proximate to sensitive structures will be pre-augered.

15.2.7 WATER QUALITY AND STORMWATER

A Storm Water Pollution Prevention Plan (SWPPP) will be prepared for the project complying with EPA's National Pollutant Discharge Elimination System (NPDES) storm water program. The SWPPP will include the implementation of BMPs to address all pollutants and their sources, including erosion, sedimentation, and other pollutant sources during construction. Both structural and non-structural BMPs for use during construction and after construction will be included. The SWPPP will outline the site maintenance and inspection procedures as well as the record keeping.

Storm water pollution prevention measures will include good housekeeping such as properly storing materials, spill prevention and response plans, and proper storage and disposal of solid wastes. Erosion and sediment controls will be used during construction until the Project Site is stabilized. The Construction Manager will also be responsible for preventing the tracking of sediments beyond the construction site and for controlling dust by using stabilized construction exits, street sweeping, and watering if necessary.

Additionally, temporary construction dewatering discharges will be appropriately controlled and discharged in accordance with the NPDES, state and local dewatering standards.

Site Preparation, Construction Staging, and General Construction Requirements

Site preparation, material staging and general construction requirements will be part of the detailed Construction Management Plan provided by the Construction Manager prior to mobilization. The plan overview is in 15.2.11.

Sedimentation and Erosion Control

Erosion and sediment risks will be reduced through the implementation of several measures, including avoiding prolonged exposure of bare soil, providing temporary and permanent stabilization as soon as practical, controlling storm water runoff, installing sediment and erosion controls, and providing frequent inspections and maintenance.

Erosion and sediment controls will be installed prior to any earth disturbing activities. BMPs must be employed to control storm water flows through the Project Site and avoid the transport of sediments off-site and towards surface waters or onto local roads. These may include silt fencing, hay bales, compost filter berms, sediment traps, check dams, diversion swales, sediment basins and/or settling tanks, and drain inlet protection.

Stockpile area(s) will be designated on-site. Stockpiles of off-site fill will be stabilized with temporary seeding and mulching, or provided with a tarp to prevent blowing dust, if the soil will not be used within a 14-day period. Stockpiles of on-site fill will be covered with polyethylene sheeting to prevent dust migration, and hay bales or silt fence may be placed around the perimeter of the stockpiles to prevent the migration of soils during rain events.

Soil stabilization will be initiated immediately after earth-disturbing activities have permanently or temporarily ceased. Temporary stabilization will be provided as soon as possible, but no later than 14 days after construction activity ceases on any particular area. Areas at final grade will be provided with permanent plantings or seeding prior to the opening of the Project.

These control measures will be specific to the contractor's equipment, construction activity and seasonal variability. Inspections will be performed in accordance with the SWPPP to be prepared for the project. This includes inspection by a qualified individual of storm water controls, stabilization measures, disturbed areas, storage areas, and points of discharge at least every 7 days and within 24 hours of a storm event of ½ inches or greater.

15.2.8 INFRASTRUCTURE PROTECTION

Ongoing coordination with the utility companies in the Project area, as well as with the MBTA and/or operator of the commuter rail line abutting the west side of the Project Site, will continue throughout the Project. Existing public and private infrastructure located within the public right-of-way will be protected during construction. Existing infrastructure within easements on the Project Site will be protected or relocated with the coordination of the utility companies prior to the start of construction.

The Construction Manager will notify utility companies and call "Dig Safe" prior to excavation. The Construction Manager will be required to coordinate all protection measures, temporary supports, and temporary shutdowns of all utilities with the appropriate utility owners and/or agencies. The Construction Manager will also be required to provide adequate notification to the utility owner prior to any work commencing on their utility. In addition, in the event a utility cannot be maintained in service during switch over to a temporary or permanent system, the Construction Manager will be required to coordinate the shutdown with the utility owners and project abutters to minimize impacts and inconveniences.

Additional measures for proposed dredging and waterfront infrastructure installations will include providing floating debris barriers and turbidity curtains for water work. Measures for dredging would include the use of an environmental style bucket to minimize turbidity, and monitoring turbidity in accordance with federal, state and local permit approvals.

15.2.9 CONSTRUCTION AND DEMOLITION MATERIALS MANAGEMENT

Solid waste generated by construction will consist of debris from the demolition of the existing pavement, structures, and utilities; soil generated from the excavation for the foundation construction of the new buildings; and packaging and scrap materials associated with new construction. Environmental investigations conducted between 1995 and 2013 have identified contamination in soil, groundwater and sediment. The proposed approach to the Project Site remediation is discussed in Chapter 12. Solid and hazardous wastes for the Project Site are discussed in detail in Section 12.1.2. Any hazardous materials will be managed in accordance with MassDEP guidelines, addressed, and disposed of accordingly.

15.2.1 RECYCLING PROGRAMS

Construction waste material from demolition and new construction will be recycled when possible. The disposal contract will include specific requirements that will ensure that construction procedures allow for the sufficient space for the necessary segregation, reprocessing, reuse and recycling of materials. For those materials that cannot be recycled, solid waste will be transported in covered trucks to an approved solid waste facility, per MassDEP's Regulations for Solid Waste Facilities, 310 CMR 16.00. This requirement will be specified in the disposal contract.

15.2.2 CONSTRUCTION MANAGEMENT PLAN

A site-specific Construction Management Plan ("CMP") will be prepared for the Project. The CMP will include measures to control and mitigate potential impacts during construction. The construction activity schedule including work hours, parameters for worker parking, designation of truck routes for deliveries, location and

sizing of construction staging areas, protection of pedestrian walkways and interim traffic management are typically addressed in the CMP. Measures addressing construction air quality and noise will be included in the CMP.

During construction, a safe environment for both pedestrians and vehicles that travel on the surrounding public ways will be maintained. Secured fencing and barricades will be used to isolate construction areas on the Project Site from pedestrian and vehicle traffic. The plan will include bussing, marine access, phased start times and Project Site office locations.

Information regarding the construction conditions and impact mitigation will be distributed to the Project Site abutters. The Construction Manager will post a sign, on-site, that includes the name of the construction company (general contractor) and phone number. This information will be clearly visible to the public so that they will be able to call with any questions or concerns.

It is expected that the majority of construction activities will be between the hours of 7:00 a.m. and 5:00 p.m., Monday through Friday. The schedule anticipates expanded hours and shift work as well as weekends which will require permission from the Everett.

15.2.3 CONSTRUCTION TRAFFIC AND PARKING

Trip generation by construction workers is directly related to the number of workers on the Project Site at a given time. The number of workers per day will vary as construction proceeds. Over the entire construction period, the average number of workers per day will be approximately 900 with peak numbers of workers at approximately 1,800 per day for an extended period of time.

The Project has access to public transportation and most workers will use one of the many transit options. The Project Site is convenient to a number of bus routes in the Project vicinity. The Proponent will also provide sufficient and secure storage areas for workers' equipment to facilitate use of public transportation. The Project also expects that many workers will be likely to carpool. In addition to these factors, construction workers generally travel before the peak hours (working 7:00 a.m. to 3:30 p.m.), lessening the impact that these workers will have on the adjacent street network during the weekday morning and evening peak hours. Also, phased start times for select trade activities can be incorporated.

On-site parking by construction workers will be minimized. Most personal vehicles will be restricted from parking at or around the construction site so as to reduce the impact to traffic. Off-site locations at which construction workers can park will be provided. Due to the proximity of public transit systems, employees will be

encouraged to use the MBTA. In addition, the Proponent will offer carpooling incentives.

15.2.4 RODENT CONTROL

The extermination of rodents will be required prior to demolition, excavation and foundation installation. The Project will use the Massachusetts Sanitary Code, Chapter 11, 105 CMR 410.550 and the State Building Code, Section 108.6, as guidelines for a formal rodent control program.

15.2.5 TIME OF YEAR RESTRICTIONS

Proposed work within the tidal zone and below MLW will be subject to Time of Year (TOY) restrictions from the Massachusetts Division of Marine Fisheries, intended to protect migratory fish as they travel up and down river and to protect winter flounder spawning and nursery habitat. For the reach of the Mystic River seaward of the Amelia Earhart dam, work would likely be restricted during the period between February 15 and July 15 or such other dates as the Division of Marine Fisheries may prescribe.

Chapter 16

Historic and Archaeological Resources

CHAPTER 16: HISTORIC AND ARCHAEOLOGICAL RESOURCES

16.1 HISTORIC RESOURCES

There are no registered historic or archaeological resources that are anticipated to be impacted by this Project, as none of the properties on the Project Site is listed in the State and National Register of Historic Places (the "Register"). There are also no archaeological resources that will be impacted by the Project due to the fact that the majority of the land portion of the Project Site is fill and has been substantially disturbed.

The mostly-vacant property contains an approximately 5,200 square foot (sf) modular building located in the northeast corner near Horizon Way, two small wood sheds, a high-tension electric tower in the northwest corner, and an industrial building of approximately 148,000 square feet in the Project Site's northwest extension. The relatively flat property is covered to a depth of approximately three feet by a mix of gravel and pavement. Along the approximately 1,650-foot shoreline, there is a mix of seawalls, loose gravel and boulders, and wood sheet piles. Remnants of timber piers and pilings are scattered within the watersheet along portions of the shoreline.

Prior to any detectible human alteration of the Project Site and its environs, the Project Site and the surrounding land originally consisted of low-lying upland, marshes and tidal flats along and within the Mystic River. The location included a former island, consistently identified as White Island in maps dating from the 1770s through most of the nineteenth century. Portions of the land within and near the Project Site were subsequently, beginning in the mid-1800s, developed in stages for a variety of uses associated with chemical manufacturing. Most notably, from 1929 to 1983, it contained facilities associated with the Monsanto Chemical Factory. From 1995 until recently, the Project Site has had various owners and uses including infrastructure project construction staging.

16.1.1 HISTORIC AND ARCHAEOLOGICAL RESOURCES ON THE PROJECT SITE

Two historic resources listed on the Inventory of Historic and Archaeological Assets of the Commonwealth (the "Inventory") are partially located within the Project Site. The first is a portion of the Broadway/Charlton Street area, a roughly 7.5 acre area that lies between the branching railroad tracks and Broadway, to the south of Route 16. The area consists of a varied collection of industrial and associated warehouse buildings which were constructed between 1895 through the mid-twentieth century. The inventory form for this resource, dating from 2000, notes that all buildings have been altered, some substantially, and additional alterations and demolitions have taken place since the time of the survey. The Project will necessitate the demolition

of an approximately 148,000 square foot building at 3 Charlton Street in order to accommodate a secondary access to the Project Site. The building at 3-9 Charlton Street, known as Charlton Place, consists of brick and metal warehouses. It was originally constructed in 1910 and is listed in the Inventory as the W.E. Clark and Company Steel Warehouse. In its current form, it has been almost entirely renovated. It is currently used as a small business center.

The Boston Elevated Railway Yard Properties, located at 80 Broadway, are also included in the Inventory. When the structures were built, between 1923 and 1939, they consisted of a metal shop, a bus repair facility, and a carpentry shop. These were all built in the International Style in brick, steel, and glass and housed repair and support services associated with the Boston Elevated Railway. The properties are currently owned by the MBTA and used as a service facility. A small portion falls within the Project Site, though this portion contains only one-story trailers and masonry buildings. The Project will require demolition of these structures.

Neither of these areas is listed on the Register and is not eligible for such a listing. See Table, 16-1, Individual Historic Resources on the Project Site and Figure 16-1, Historic and Archaeological Resources.

Table 16-1, Individual Historic Resources on the Project Site

Name	Address	Listing/Designation
Broadway/Charlton Street Area	N/A	Inventory of Historic and Archaeological Assets of the Commonwealth
Boston Elevated Railway Yard Properties	80 Broadway	Inventory of Historic and Archaeological Assets of the Commonwealth

16.1.2 HISTORIC AND ARCHAEOLOGICAL RESOURCES IN THE VICINITY OF THE PROJECT SITE

While historic resources are present in the vicinity (within approximately one-quarter mile of the Project Site), it is not anticipated that the Project will have any significant impact on historic resources beyond the Project Site boundary. Anticipated new shadow would not fall on any historic resources listed in the Commonwealth's Inventory of Historic and Archaeological Assets, and no major sightlines to historic resources would be impacted by the Project within the Project Site.

Table 16-2, Individual Historic Resources in the Vicinity of the Project Site, and Figure 16-1, Historic and Archaeological Resources, show properties in the vicinity

of the Project Site (within approximately one quarter mile). This includes historic resources listed on the Commonwealth's Inventory.

Table 16-2, Individual Historic Resources in the Vicinity of the Project Site

Name	Address	Listing/Designation
Revere Beach Parkway	Route 16	State and National Register of Historic Places Inventory of Historic and Archaeological Assets of the Commonwealth
Everett Station Garage	145 Broadway	Inventory of Historic and Archaeological Assets of the Commonwealth
Alford Street Bridge	N/A	Inventory of Historic and Archaeological Assets of the Commonwealth
H.K. Porter and Sons Battery Clippers Factory	6 Ashland Street	Inventory of Historic and Archaeological Assets of the Commonwealth
Colonial Beacon Oil Refinery Business Office	30 Beacham Street	Inventory of Historic and Archaeological Assets of the Commonwealth
Electric Company Substation #10	37 Thorndike Street	Inventory of Historic and Archaeological Assets of the Commonwealth
Hendersonville	N/A	Inventory of Historic and Archaeological Assets of the Commonwealth
Lemuel Edmester House	199 Bow Street	Inventory of Historic and Archaeological Assets of the Commonwealth

State and National Register Listed Properties

Only a portion of one property, the Revere Beach Parkway (Route 16 through Everett) is listed on the State and National Registers. Because of extensive alterations to the Revere Beach Parkway over the past decades, only certain portions of it are considered to be contributing features to the District. The Woods Memorial Bridge, the Krystal K. Poirier Memorial Roadway including the westbound bridge that runs over the MBTA tracks, and Sweetser Circle and its overpasses are all identified as contributing features. Santilli Circle and its East Access Ramp are not considered to be contributing features due to a loss of integrity following alterations. The eastbound bridge over the MBTA tracks was replaced in 2002 and is also therefore not considered contributing.

Proposed changes to the Revere Beach Parkway as a result of the Project are described in Chapter Four, Transportation. None of the proposed changes to the Revere Beach Parkway, including the proposed changes to Santilli Circle, are anticipated to impact the portions of the Revere Beach Parkway that are considered

to be contributing features. The Proponent will work with the Department of Conservation and Recreation and the Massachusetts Department of Transportation, in consultation with the Massachusetts Historical Commission, regarding appropriate design of roadway modifications that accomplish transportation improvements in a manner consistent with the historic values of the District.

Projects on the Inventory of Historic and Archaeological Resources of the Commonwealth

The Everett Station Garage

The one-story, concrete block Everett Station Garage at 145 Broadway was built in 1924. The building was vacant when it was surveyed in 1983 and remains vacant today. While designed with Classical Revival detailing, since it was inventoried in 1983 all of the building's major character-defining details, including its decorative pediment, sign, and pilasters have been altered or destroyed. Since the time of the survey, an entirely new concrete façade has been added to the building along Broadway, completely obscuring its original façade. The building is therefore likely lacking in historic integrity needed to make a strong case for preservation.

The Alford Street Bridge – Malden Bridge

The Alford Street Bridge, otherwise known as the Malden Bridge, crosses the Mystic River, connecting Charlestown and Somerville to Everett. The bridge was constructed in 1966 and is notable for its engineering. However, an extensive renovation and partial reconstruction involving the deck, superstructure and substructure began in 2010 and is ongoing. This work has involved considerable alteration to the original structure.

The H.K. Porter and Sons Battery Clippers Factory

Located at 6 Ashland Street, this brick building dates from 1900, and was expanded with the addition of a third story and gable roof in 1930. The building was built for the manufacture of bolt, wire and storage battery clippers. The building appears to be vacant currently and its exterior condition appears to be fair, but a structural assessment would be required to determine its actual interior and exterior structural condition.

Colonial Beacon Oil Refinery Business Office

This three-story, approximately 14,300 sf, L-shaped brick building, located at 30 Beacham Street, served as an office building for a succession of oil companies that have occupied the large site behind it, to the east. Built in the Art Moderne Style, it has some brick detailing and other architectural features that distinguish it from other similar brick buildings in the area. It was determined to be in good condition

at the time when it was surveyed, in 2000, but since that time appears to have suffered from significant deterioration and is vacant.

The Edmester Lemuel House

Constructed in 1835, this Greek Revival house at 199 Bow Street is historically significant as an isolated remnant of the area's early 19th century residential development. Bow Street is the oldest street in Everett, once lined with 18th and early 19th century houses, and according to the inventory form for the house "it is significant architecturally as the only surviving early building in the southern section of Everett." However, this building has been substantially altered; it has been covered with asbestos shingles, an addition with a new gable has been added, and its trim has been removed.

Electric Company Substation #10

Built in 1928, this utilitarian brick structure at 37 Thorndike Street has modest neo-classical elements. It was one of two electrical substations used to transform electricity received from the main Malden Power Plant before being delivered to buildings in the city.

Hendersonville

The Hendersonville residential district lies immediately north of the Revere Beach Parkway, approximately one quarter mile from the project Site. Named for the Henderson Brothers who planned in 1890 and developed it by 1894, it is historically significant as a planned subdivision designed to accommodate those who labored in the nearby industrial plants. The neighborhood, which is centered along the spine of Wellington Street consists primarily of two-story frame houses on a rectangular plan on uniformly sized lots approximately 2,500 square feet.

Mystic River Railroad Bridge

The Mystic River Railroad Bridge (known as "Draw 7") was constructed in 1894 and listed on the Inventory of Historic and Archaeological Resources and in the 2009 Mystic River Master Plan, but has since been demolished.

16.1.3 ARCHAEOLOGICAL RESOURCES WITHIN THE PROJECT SITE

There is no evidence that the Project Site is likely to contain significant archaeological resources. Due to previous uses, the Project Site has been substantially disturbed and a significant portion of it is located on fill.

16.1.4 UNDERWATER ARCHAEOLOGICAL RESOURCES

Current plans for the Project should not result in underwater excavations that would disturb potential underwater archaeological resources. Prior dredging and other activities occurred in the location of underwater project activities, indicating that underwater archaeological resources are unlikely to be present. The Proponent has consulted with the Massachusetts Board of Underwater Archaeological Resources (BUAR) and given the prior dredging and other alterations which took place on the site, the BUAR concluded that the project would be unlikely to affect any important submerged cultural resources and an archaeological assessment is no longer necessary.

Figure 16-1
Historic and Archaeological Resources
Source: MACRIS, 2013; MHC, 2013

Chapter 17

MITIGATION MEASURES

CHAPTER 17: MITIGATION MEASURES

17.1 SUMMARY OF MITIGATION AND ENHANCEMENT MEASURES

The Project has incorporated numerous mitigation measures to respond to potential impacts related to transportation, wetlands and waterways resources, greenhouse gas emissions water use, waste water and stormwater impacts, contamination and remediation mitigation, and construction period mitigation, as well as significant environmental and community enhancement measures. A summary of mitigation and enhancement measures is presented in this Chapter 17. Mitigation measures that are associated with permits required from State Agencies will be itemized in Section 61 Findings as they are issued by State agencies following completion of the MEPA review process. See Chapter 18, Draft Section 61 Findings for draft versions of these findings.

17.1.1 PUBLIC BENEFITS

As described in Chapter 2, Project Description, significant and substantial public benefits will be realized with the construction and operation of the Project. As outlined in the Host Community Agreement, the Project will provide millions of dollars in short term and long term revenues, construction as well as permanent jobs and public realm improvements to the City of Everett and the regional economy. These benefits include, but are by no means limited to:

Community Enhancement Fee

The Proponent will, prior to opening, provide the City with payments totaling Thirty Million Dollars ($30,000,000) to be used for capital improvements projects identified by the city.

New Real and Personal Property Tax Revenue

The Proponent will, after opening, provide the City with annual payments in lieu of real estate taxes starting at Twenty Million Dollars ($20,000,000) which shall increase by two and one-half percent (2.5%) annually.

Community Impact Fee

The Proponent will, after opening, provide the City with annual community impact payments starting at Five Million Dollars ($5,000,000) which shall increase by two and one-half percent (2.5%) annually.

Everett Citizens Foundation

The Proponent will, after commencing construction, fund an Everett Citizens Foundation with annual payments starting at Two Hundred Fifty Thousand Dollars ($250,000) which shall increase by two and one-half percent (2.5%) annually. The Everett Citizens Foundation will provide additional community benefits (e.g., inclusion of local vendors) relevant to Project impacts and to generally benefit Everett and its residents.

Single Phase Construction

The Proponent will construct the Project and open in a single phase ensuring the City of Everett and the State the realization of the complete development Project that has been promised, eliminating the risk promised phases are delayed or never delivered.

Tax Revenues

The Project will generate significant new tax revenue at the state and local levels in the form of sales taxes, hotel taxes, food and beverage taxes, as well as taxes on gross gaming revenues.

New Jobs

Approximately 4,000 construction jobs and approximately 4,000 permanent resort jobs, the latter of which will encompass job categories such as hotel/resort personnel, facility employees, food and beverage, gaming, and management and operational areas and will include full job training, benefits and opportunities for career advancement. To the extent permitted by law, Wynn will give reasonable preference to properly qualified residents from the City of Everett.

Support for Local Businesses

The Proponent will make a good faith effort to use local contractors and suppliers for both construction and future operations, including actively soliciting bids from Everett based vendors and coordination with the Everett Chamber of Commerce. The Proponent will also purchase and issue at least $50,000 in vouchers and gift certificates annually for Everett businesses outside the Project Site. The Proponent also intends to partner with Everett and Boston area hotels, restaurants, entertainment venues and tourism organizations to attract visitors and boost the local economy.

Roadway Improvements

Wynn has studied the impacts that will be caused by the construction and operation of the Project, with an emphasis on traffic patterns. The Project will provide significant transportation improvements to the surrounding roadway network that

will improve existing conditions and accommodate the additional Project-generated trips. Proposed infrastructure and transportation improvements are described in Section 17.1.2.

Public and Alternative Mode Transportation Enhancements

The Project will utilize and enhance existing and potential public transportation and alternative non-vehicular transportation resources in the area. As discussed in Section 17.1.2, the Project will provide enhancements to transportation infrastructure that serves the Project site and the surrounding area including fixed-route shuttle bus service, new MBTA bus stops, water shuttle service, and bicycle and pedestrian amenities.

Environmental Remediation

Historic use of the Project Site as a chemical manufacturing plant has resulted in significant environmental contamination that has impeded redevelopment, leaving this large waterfront parcel critical to the city's development plans blighted and vacant. Mitigation and remediation efforts conducted in accordance with the Massachusetts Contingency Plan ("MCP") will make the property available and safe for beneficial reuse as a casino, retail, and public waterfront facility, and will enable restoration of public access to this area of the waterfront.

Open Space, Waterfront Access, and Shoreline Enhancement

Working in partnership with the City of Everett, a Municipal Harbor Plan ("MHP") has been proposed for State approval that is consistent with the Project, the City's Lower Broadway Master Plan and the City's vision for the central waterfront. Consistent with the MHP and other State Regulations, the Project will revitalize the previously inaccessible and blighted Lower Broadway waterfront for public access, use and enjoyment. Planned improvements include significant open space and public amenities along the water's edge, extending the existing waterfront trail, and creating pedestrian and bicycle connections between Gateway Park and the Lower Broadway District. A restored coastal bank and salt marsh perimeter is planned for the Project peninsula's interface with the Mystic River. In addition, clam and oyster beds are proposed to be established in the intertidal area below Mean High Water.

Sustainable Design/Green Building

The Proponent will set a new standard of excellence in sustainable design for gaming development projects. Designed to achieve LEED Gold or higher, the Project will be sustainable, energy efficient, environmentally conscious, and healthy for its employees and visitors. Innovative technologies are currently being explored to determine which technologies are most appropriate and effective in reducing the Project's environmental impact, as well as what might set a visible example for those visiting the Site.

City of Everett Infrastructure Improvements

To support the Project, mitigate potential impacts, and improve existing infrastructure, the Proponent has agreed to upgrade as necessary streetscape, water, natural gas, water and sewer and other infrastructure improvements as needed.

Water Quality Improvements

The Project will implement a stormwater management plan on the Development Site, which will lead to enhanced water quality in Everett and the Mystic River.

Support for Local Arts

The Proponent will include features or programs in the Project for the benefit of the arts and local artists, which may include periodically hosting or providing space for community shows, exhibits, concerts, and other local cultural and arts programs. Programming will be designed to be used and enjoyed by residents of Everett, including waterfront access and outdoor gathering spaces.

17.1.2 TRANSPORTATION

As described in detail in Chapter 4, Transportation, significant improvements to the local and regional transportation network will be realized with the construction and operation of the Project. Improvements to the layout, function, and signalization of Route 16, Route 99 (Broadway) and other local roads, as well as pedestrian, transit, and water transportation accommodations are proposed. Specific transportation mitigation measures in the form of a transportation improvement program are outlined below.

The transportation improvement program developed for the Project addresses Project access, off-site improvement strategies at intersections proximate to the Project Site, and Transportation Demand Management (TDM) strategies. For a table of transportation mitigation and enhancement measures with proposed costs and timeframes, see Chapter 18, Draft Section 61 Findings.

17.1.2.1 PROJECT ACCESS

Access to the Project Site will be provided by way of a boulevard-type driveway that will intersect the west side of Lower Broadway (Route 99) opposite Mystic Street and will be placed under traffic signal control. Secondary access for deliveries and employees will be provided by way of a driveway that will also intersect the west side of Lower Broadway north of the primary Project Site driveway. It is envisioned that the secondary driveway will also be placed under traffic signal control.

The primary Project Site driveway will be designed and constructed as a signature entrance to the Project Site consisting of a four (4) lane boulevard (two (2) lanes in each direction) with a landscaped island, marquee sign, period lighting, sidewalks, and bicycle accommodations. Additional turning lanes will be provided for traffic exiting the Project Site at Lower Broadway. Signals for the primary Site driveway will be interconnected and coordinated with the adjacent traffic signals along Lower Broadway.

The additional secondary access for service and deliveries will be developed for the Project that will intersect Lower Broadway (Route 99) north of the primary Project access. The secondary access is shown in Figure 4-43B. It is envisioned that the secondary driveway will also be placed under traffic signal control. The secondary access would primarily be used by trucks delivering goods and services to the loading docks of the Project, which will be located in the northwest corner of the Project. The secondary access could also be used by the employee shuttle service that will be provided between the Project site and off-site employee parking.

Subject to the approval of the DCR and the MBTA, a pedestrian and bicycle connection to the Project Site will be provided beneath the MBTA Commuter Rail allowing for an extension of access from the Harborwalk along the Project frontage to the linear park system along the Mystic River and to the pedestrian and bicycle facilities along Broadway.

17.1.2.2 OFF-SITE IMPROVEMENTS

Lower Broadway, Everett

Lower Broadway will be reconstructed between Revere Beach Parkway (Route 16) and the primary Project driveway in the context of a "Complete Streets" design to provide a general four-lane cross-section (two travel lanes per direction) with additional turning lanes provided at major intersections, sidewalks along both sides, and bicycle lanes. A landscaped median and street trees will be provided where sufficient right-of-way is afforded. Existing traffic signals along the corridor will be reconstructed to include ornamental (period) poles, mast arms, lighting and appurtenances, and will include pedestrian and bicycle accommodations.

In order to improve intersection operations, the adjacent signalized intersections along Lower Broadway (Route 99) will be coordinated and

the offsets shall be optimized. By extending the cycle lengths to 120 seconds and adjusting the phasing splits the operations at Beacham Street/Broadway (Route 99) and Bowdoin Street/Broadway (Route 99) may be improved.

In an effort to reduce truck traffic along the segment of Lower Broadway (Route 99) between Beacham Street and the Boston City Line, Robin Street and Dexter Street will be improved to facilitate truck access to the commercial/industrial areas to the east of Lower Broadway (Route 99). These improvements will include rehabilitation of the pavement structure and surface, and improving corner radii to facilitate truck turning movements. Removal of truck traffic along this segment of Broadway (Route 99) will improve traffic flow and safety in the area.

Santilli Circle, Everett

As an interim improvement, signs and pavement markings at and within the intersection will be upgraded to improve motorist guidance and safety, and to meet current design standards. In addition, the existing coordinated traffic signal system that comprises Santilli Circle will be upgraded and retimed to accommodate existing and projected future traffic volumes and patterns.

In the longer term, in order to accommodate both access to the Project Site and to address current and projected future operational deficiencies at Santilli Circle, the Proponent proposes to replace the signalized rotary with a grade-separated, single-point, urban interchange. The Proponent will provide the necessary design and construction funding to complete the proposed improvements. The proposed improvements to Santilli Circle are shown in Figure 4-78. The re-routed traffic volumes for the Build "2023" Mitigated conditions in the Friday p.m. and Saturday afternoon peak hours are shown in Figure 4-79 and Figure 4-80, respectively.

Additional geometric enhancements will be completed to allow for the addition of travel lanes on the approaches to the intersection in order to reduce vehicle queuing and motorist delays. Specifically, the Broadway and Main Street approaches will be widened to accommodate two (2) travel lanes approaching the Circle; the Route 16 connector will be widened and restriped to provide two (2) approach lanes; and the circulating area within Sweetster Circle will be reconfigured to function as a two (2) lane modern roundabout.

It is expected that the completion of the improvements to Santilli Circle described above (replacement of the intersection with a grade separated, single-point, urban diamond interchange) will also result in a direct improvement to traffic operations within Sweetser Circle.

Wellington Circle, Medford

In order to address both current and projected future operational deficiencies at Wellington Circle, the Proponent will commit to funding study and conceptual design of improvements.

Sullivan Square, Boston

As an interim improvement prior to advancement of the contemplated major reconstruction of Sullivan Square as envisioned by the City of Boston, the following improvements are recommended: develop an optimal traffic signal timing plan for the Maffa Way/Cambridge Street intersection and interconnect and coordinate the traffic signal with the adjacent traffic signals; install a traffic control signal at the intersection of Rutherford Avenue at the traffic circle and interconnect and coordinate the new traffic signal with the Maffa Way/Cambridge Street traffic signal; and widen the Main Street approach to the intersection to provide two (2) approach lanes.

The Proponent is willing to commit funding for planning and conceptual design of the City of Boston's preferred alternative design of Sullivan Square and Rutherford Avenue.

Other Off-Site Improvements

In addition, specific improvements are proposed for:

- Beacham Street at Broadway (Route 99)
- Norwood Street, Chelsea Street, and Broadway (Route 99)
- Revere Beach Parkway (Route 16) at Washington Street
- Beach Street, Everett Street, Route 1A, Route 16, and Route 60 (aka Bell Circle)
- Cambridge Street at I-93 Northbound Off-Ramp

17.1.2.3 TRANSPORTATION DEMAND MANAGEMENT MEASURES

Overall, the Project's impact on the transportation infrastructure is expected to be adequately mitigated through the planned transportation infrastructure improvements that will be completed in conjunction with the Project; however, the following pedestrian and bicycle improvements/accommodations, Transportation Demand Management (TDM) measures, and trip reduction strategies are proposed with the goal of further minimizing the Project's overall impact.

Pedestrian Improvements

As part of the Project, the Proponent will define and enhance pedestrian facilities as follows:

- Sidewalks and pedestrian promenade areas will be provided within the Project Site that will connect to the sidewalk infrastructure along Lower Broadway (Route 99).
- Lighting will be provided within the Project Site and around building perimeters.
- Full handicapped access will be provided within the Project Site and along proposed internal circulating roadways, including ramps for barrier-free access where appropriate; pedestrian crosswalks, pushbuttons and phasing will be provided at all signalized intersections constructed or modified in conjunction with the Project where sidewalks and crosswalks are provided; and crosswalks and associated pedestrian crossing warning signs will be installed at and in advance of pedestrian crossing locations as appropriate, and will be designed and installed in accordance with the *Manual on Uniform Traffic Control Devices* (MUTCD).[1]
- Existing pedestrian traffic signal equipment (pushbuttons and indications) will be upgraded/replaced at all signalized intersections to be modified in conjunction with the Project in order to meet current design standards for accessibility.

[1]Manual on Uniform Traffic Control Devices (MUTCD); Federal Highway Administration; Washington, DC; 2009.

- Pedestrian phase timing will be reviewed and adjusted as may be necessary to meet current MUTCD design standards at all signalized intersections within the study area where such accommodations are present.

- The City/DCR Mystic River Parkway trail system will be extended to the Project Site to allow pedestrian and bicycle access to and from Wellington Station on the MBTA Orange Line subway system. These accommodations are consistent with those that will be constructed as a part of MassDOT's reconstruction of the Woods Memorial Bridge over the Malden River, which includes a pedestrian and bicycle connection over the Malden River parallel to Revere Beach Parkway (Route 16).

Bicycle Accommodation

The Project will include the installation of bicycle racks or storage areas within the secure parking garage for use by resort guests and employees. Signs will be provided within the Project Site that will direct bicyclists to the bicycle parking area and to both the multi-use path and the Lower Broadway bicycle route that are to be constructed as a part of the Project. The Project Site driveways and circulating roadways within the Project Site will provide sufficient width to accommodate bicycle travel in a shared travelled-way configuration.

All traffic signals to be constructed or physically modified in conjunction with the Project will include bicycle detection and associated signs and pavement markings, if and to the extent feasible and appropriate. In addition, the multi-use pathway system constructed as a part of the DCR Mystic River Parkway will be extended to the Project Site and will link to the planned bicycle lanes to be constructed along Lower Broadway as a part of the Project. These facilities will be complemented by the bicycle accommodations that are planned as a part of MassDOT's reconstruction of the Woods Memorial Bridge, which includes bicycle lanes and will allow for continuous bicycle access between Lower Broadway, Wellington Station, and the northern portion of the Mystic River Parkway.

Traffic Reduction Strategies

In order to reduce single occupant vehicle (SOV) travel to the Project Site and encourage the use of alternative modes of transportation, the Proponent will make available to employees and resort guests

information and assistance regarding a range of traffic reduction measures, as detailed in the following paragraphs.

Ridesharing Programs - Ridesharing refers to encouraging commuters to ride in vehicles with other commuters rather than drive alone to work. The most common forms of ridesharing are carpools and vanpools, and the use of public transportation services. The benefits of such programs include less congestion, reduced fuel consumption, and better air quality. Keys to the success of such programs typically include:

- Carpool/vanpool matching programs;
- Dissemination of promotional materials; and
- Newsletters about the program.

The Project will implement these measures in coordination with MassRIDES, which provides administrative and organizational assistance regarding employee commuting services and informational packets of commuting alternatives to be made available to employees and resort guests. The Project will encourage employees to participate in MassRIDES' NuRide program which rewards employees that choose to walk, bicycle, carpool, vanpool, or use public transportation.

- Assign a Transportation Coordinator for the Project;
- Provided MBTA bus stops at the primary driveway along Lower Broadway;
- Provide fixed-route shuttle bus service to and from the Project Site and the MBTA Orange Line stations at Wellington Station and at Sullivan Square;
- Fixed-route services may be expanded to include service to Logan International Airport, North Station, South Station and other major transportation hubs, and will be coordinated with Everett and the MBTA;
- Provide water shuttle service to the Project Site;
- Provide a dock to accommodate water transportation facilities;
- Provide a touch and go dock for transient boat access to the Project Site;

- Provide on-site sale of *Charlie Cards* for employees and for guests of the resort;
- Make available to employees and resort guests information regarding public transportation services, maps, schedules and fare information;
- Promote the use of public transportation to resort guests in website based materials including links to the appropriate homepages of the MBTA, MassRIDES, and Massport;
- Participate in the MBTA Corporate Pass Program to the extent practical and as allowable pursuant to commercial tenant lease requirements;
- Provide electric vehicle charging stations within the proposed parking garage;
- Coordinate with Zipcar to provide car sharing services at the Project Site;
- Provide preferential parking for car/vanpools and alternatively fueled vehicles;
- Offer a "Guaranteed-Ride-Home" in case of emergency to employees that commute to the Project by means other than private automobile; and
- Provide a periodic newsletter or bulletin concerning commuting options.

In addition, the Proponent will explore with Everett and the MBTA provision of a stop on the MBTA Commuter Rail system to serve both Everett and the Project.

Annual Monitoring and Reporting Program

The Project proponent will conduct a post-development traffic monitoring and employee survey program in order to evaluate the success and to refine the elements of the TDM program.

17.1.2.4 WATER TRANSPORTATION OPPORTUNITIES

The Project Site appears to have potential for passenger services connecting to Inner Harbor ferry terminal locations. The Project will

provide a multi-purpose dock and related navigation improvements to serve ferry and water taxi passengers. The Project also proposes to support provision of a scheduled water shuttle service from the Down town waterfront and the World Trade Center on the South Boston waterfront. Such a passenger service, in coordination with the land-based transit system, is expected to provide an attractive alternative to driving for a portion of the Project's patrons and employees.

17.2 WETLANDS AND WATERWAYS

As described in Chapter 8, Wetlands and Waterways, measures incorporated into the Project will contribute to improved water quality, clean-up and restoration of bulkheads and piers, overall trash and litter removal along the waterfront, and restoration and enhancement of areas of natural shoreline along the Project Site. In connection with work within tidelands jurisdiction, the Project will also create public access and amenities to currently and historically inaccessible areas of the City of Everett's Central Waterfront.

Key wetlands mitigation and enhancement measures include:

- Remediation, revegetation and enhancement of 550 linear feet of existing shoreline with enhanced "living shoreline;"
- Removal of invasive vegetation and planting of native herbaceous and shrub vegetation along part of existing Coastal Bank and River Front Area;
- Transformation of 11,000 +/- SF of disturbed Coastal Beach/Tidal Flats to Salt Marsh;
- Reestablishment and restoration of soft shell clam and oyster beds within 30,000 +/- square feet of Land Under the Ocean area;
- Dredging to remove contaminated sediments from the harbor bottom and to provide ample draft for water transportation, recreational vessels and a proposed floating dock;
- Debris clean up within the Land Under the Ocean, Coastal Beach and Coastal Bank resource areas;
- Replacement of existing bulkhead and construction of new bulkheads within areas of existing degraded Coastal Beach and Coastal Bank areas; and
- A Stormwater Pollution Prevention Plan (SWPPP) will be prepared in support of a Notice of Intent (NOI) filing with the EPA for coverage under the National Pollution Discharge Elimination System (NPDES) Construction General Permit

(CGP). The Project will incorporate new stormwater management systems in compliance with applicable requirements of State and City of Everett Stormwater Management Standards. The SWPPP and long-term stormwater improvements will provide stormwater mitigation measures to be implemented both during and after construction to improve water quality.

As further described in Chapter 8, Wetlands and Waterways, the Project includes mitigation and enhancement measures related to work in Massachusetts tidelands jurisdiction. The key mitigation measures related to tidelands include:

- Construction of high quality landscaped open space along the edge of the Mystic River and the existing degraded Coastal Bank, Buffer Zone and Riverfront Area, opening this site to public access for the first time;
- Creation of a Harborwalk along the water's edge, linking under the MBTA rail line through to the DCR's Gateway Park to the west along the Mystic River and also connecting from the site east out to Lower Broadway;
- Provision of a fully accessible, public water transportation dock designed to support future water transportation service to Downtown Boston and other regional water transportation destinations; and
- Development of an attractive public destination for water dependent uses along the waterfront, including significant open space, outdoor seating, viewing areas, a gazebo and public docks.

17.3 WATER USE

The Project is designed to meet Leadership in Energy and Environmental Design ("LEED") standards of Gold or higher, and incorporates water conservation measures that are intended to reduce the potable water demand on the MWRA water supply system. The Project will utilize water-efficient plumbing fixtures, low-flow lavatory faucets and showerheads. Through rainwater harvesting, grey water reuse and the installation of alternatives to natural turf landscaping, the Project can further reduce water demand and use.

As designed, the Project includes extensive indoor and outdoor landscaping. The Project will utilize timers, soil moisture indicators and rainfall sensors to reduce potable water use on landscaping.

17.4 WASTEWATER

The Project will work with the City of Everett to identify sewer improvement measures to be provided or funded by the Project that would remove Infiltration and Inflow ("I/I")

equivalent to 4 gallons removed for every gallon of new wastewater generated, in compliance with applicable MassDEP policy.

In compliance with local and state regulations, grease traps and gas and oil separators will be installed to treat the flow prior to combining with other wastewater.

While planned uses at the Project Site are not themselves a source of pathogens, a major source of the pathogens in the Mystic River is existing combined sewer overflows (CSOs) that occur in wet weather when high volumes of rain runoff overload sewers collecting stormwater and sanitary sewage in one interconnected system, resulting in the discharge of untreated sewage. The City of Everett does not have such a combined system but other municipalities along the Mystic and Malden Rivers do operate combined facilities.

The Project intends to investigate, in collaboration with the City of Everett and the MWRA, assisting with modifications to regional wastewater infrastructure that would reduce the incidence of CSOs into the Mystic River associated with the Cambridge Branch Sewer, a facility that receives sanitary flows from several nearby municipalities. Such upgrades may, for example, involve directing City of Everett sanitary flow away from the Cambridge Branch Sewer in order to support that facility's function and capacity. See Chapter 13, Wastewater, for further information on potential regional sanitary sewer improvements.

17.5 STORMWATER

The Project includes installation of a stormwater management system that will dramatically improve the quality of runoff on-site. The management system will meet and exceed local, state and federal regulations relating to stormwater management, including the applicable requirements set forth in the City of Everett's Zoning Ordinance and the MassDEP Stormwater Management Policy. The Project will construct two new outfalls that will discharge treated stormwater into the Mystic River. Stormwater will be treated through use of Best Management Practices ("BMPs") such as pavement sweeping, deep sump catch basins, tree box filters, filtering bioretention areas, hydrodynamic stormwater separators, and stormwater media filters. The stormwater outfalls will be designed so as not to cause erosion. The stormwater management system will reduce the generation of stormwater and non-point source pollution by increasing the landscaped area and through the use of stormwater management BMPs. The stormwater management system will be designed to remove at least 80 percent of the average annual load of Total Suspended Solids (TSS). The Proponent will continue to work with the Mystic River Watershed Association to develop a pollution prevention plan for construction activities as well as long-term maintenance procedures for the resort casino. Operations plans are expected to include limiting the use of pesticides, fertilizers and manure on the Project Site, providing educational signage to discourage practices that attract geese and other wildlife, and providing a buffer zone for domesticated pets from the river. During construction catch basins, silt fences, hay bales and crushed stone will be used to provide sediment removal from runoff.

Stormwater management improvements are discussed further in Chapter 9, Stormwater.

17.6 AIR QUALITY

The Project will mitigate potential air quality impacts through a variety of TDM strategies, as well as roadway and traffic signal improvements that are described in Chapter 4, Transportation. The Project is well-served by public transportation, and TDM measures improve traffic operations, reduce project generated vehicle trips, and reduce project related motor vehicle air pollutant emissions by approximately 5.0 percent. See Chapter 4 for a full list of TDM mitigation measures.

17.7 GREEN HOUSE GASES AND SUSTAINABILITY

Design the building to be certifiable under the Green Building Council Leadership in Energy and Environmental Design (LEED) rating of Gold or higher. With the addition of on-site cogeneration and PV, the Project may achieve a Platinum rating. Mitigation commitments have been made that are designed to reduce the environmental impacts for the entire Resort, or for individual buildings as applicable. The project will commit to a comprehensive list of Energy Efficiency Measures (EEM) that are predicted to reduce energy and CO_2 emissions by 21% and 22.1% respectively. Proposed EE measures include:

- Cool roofs
- Central chiller plant with better efficiency than Code
- Demand Control Ventilation (DCV) for the casino, public entertainment, and retail areas
- Energy Recovery Ventilation (ERV) to reduce chiller energy use
- Building envelopes with roof and window insulation better than Code
- Skylights over the entry atrium and along the retail promenade (daylighting controls will be tied to this extensive system of skylights)
- Lower light power density 20% better than Code
- Low-energy Electronic Gaming Machines (EGMs)
- High efficiency elevators with regenerative VVVF drives and LED lights
- Demand Control Exhaust Ventilation (DCEV) with variable frequency drive (VFD) fans for enclosed parking structures and metal halide lighting for all parking structures
- Kitchen and restaurant refrigeration energy efficiency design to reduce energy use
- Energy-STAR appliances
- Enhanced building commissioning
- Occupancy controls for non-occupied or infrequently occupied spaces

The Project has adopted the following Renewable Energy Measures:

- Photo-voltaic (PV) system on the podium building roof, providing approximately 3% of the Project's annual electrical consumption;

- Purchase of approximately 7% of the Project's annual electrical consumption from local service providers of Green Power; and

- Cogeneration plant using a nominal 1-MW microturbine, providing approximately 20% of the Project's annual electrical consumption (the cogeneration plant is capable of providing 6,307 MWhr/year of on-site electrical generation, supporting 780 tons of absorption cooling, and providing up to 50 percent of the Project's annual heating and hot water needs)

Transportation Demand Management measures listed in Chapter 4, Transportation are projected to reduce motor vehicle CO_2 emissions by an additional 5.0 percent. When combined, (stationary source plus transportation), the Projects total CO_2 emissions reductions are 19.6 percent compared to the Base Case.

In addition to EEM measures the Proponent's corporate commitment to sustainable development will incorporate additional sustainability measures into the Project. The Project buildings will be designed to be certifiable under the Green Building Council Leadership in Energy and Environmental Design (LEED) rating of Gold or higher. The Project will be operated utilizing a series of best operating practices consistent with LEED principles to maintain the energy use, water efficiency, atmospheric, materials and resources use, and indoor air quality goals.

The Project will also plan for and account for the effects of Sea Level Rise by elevating the proposed structures to a minimum of 3.35 feet above the 100-year flood level. The Project will also incorporate the following design criteria:

- Parking garages entrances and other openings into below grade spaces will be elevated a minimum of 3.35 feet above the 100-year flood level, or will be sufficiently flood proofed to avoid damage from coastal storms, and

- Critical infrastructure and HVAC equipment will be elevated above projected flood levels.

17.8 BROWNFIELDS REMEDIATION

Contamination created by historic releases of oil and hazardous materials on the Project Site will be addressed under the Massachusetts Contingency Plan ("MCP") and in compliance with all applicable laws and regulations. Mitigation and remediation efforts will make the property safe for all casino, retail and public use of the waterfront, and will restore public access to an area of the waterfront that has historically never been accessible to the to the public. A Response Action Outcome will be achieved with respect to releases of oil and hazardous materials at and from the Project Site, including a Permanent Solution at the upland portion of the Project Site.

Chapter 18

DRAFT SECTION 61 FINDINGS

CHAPTER 18: DRAFT SECTION 61 FINDINGS

The Massachusetts General Laws Chapter 30, Section 61 requires State agencies and authorities to evaluate and determine whether the Project causes any damage to the Environment, and shall make a finding describing the damage and confirming that all feasible measures have been taken to avoid, minimize and mitigate damage to the environment. In accordance with 301 CMR 11.12(5)(c)), any Participating Agency shall limit its Section 61 Findings, or any mitigation measures specified as conditions to or restrictions on the Agency Action, to those Aspects of the Project that are within the subject matter of any required Permit or within the area subject to a Land Transfer. The findings required by Section 61 "shall be limited to those matters which are within the scope of the environmental impact report, if any, required by this section." M.G.L .c.30 sec. 62A.

State Agencies that will be required to make Section 61 Findings for the Project prior to issuing permits for implementing the Project include or may include MassDEP, MassDOT, DCR, MWRA, and the Massachusetts Gaming Commission.

The following proposed Section 61 Findings will be updated with the filing of the Final Environmental Impact Report (FEIR). For detailed information regarding the Project mitigation commitments, refer to Chapter 17, Mitigation Measures. Note that, with the exception of transportation mitigation identified in Section 18.1, MassDOT Proposed Section 61 findings, costs identified with mitigation measures are included in overall project cost analysis, and will be identified within the individual updated draft Section 61 Findings in the FEIR. Unless otherwise noted, timing to complete mitigation measures identified in the Section 61 Findings will be either during construction or prior to Project opening.

18.1 MASSDOT PROPOSED SECTION 61 FINDINGS

These Findings for Wynn MA, LLC at Wynn Everett (EEA #15060) have been prepared in accordance with the provisions of M.G.L. c. 30, Section 61 and 301 CMR 11.00. On [DATE] the Secretary of Energy and Environmental Affairs issued a Certificate stating that the Project's Final Environmental Impact Report (DEIR), dated [DATE], adequately and properly complied with the Massachusetts Environmental Policy Act and its implementing regulations.

Wynn MA, LLC at Wynn Everett presents a unique opportunity to re-energize the Project area with a mixed-use urban resort casino development. The Project program includes a luxury hotel with 500 rooms, gaming areas, retail, dining, health club and spa, and conference/entertainment space with parking and drop-off areas. The Proponent proposes to construct substantial infrastructure improvements on Broadway (Route 99) in the vicinity of the Project site as an integral part of the Project, and the Project also includes a number of other transportation-related improvements.

As this Project is currently described, the following permits will be required from the Department:

- Vehicular Access Permit (Category III); and
- Non-Vehicular Access Permit.

Based upon its review of the MEPA documents, the permit applications submitted to date, and the Department's regulations, the Department finds that the terms and conditions to be incorporated into the permit required for this Project will constitute all feasible measures to avoid damage to the environment, including consideration of the potential effects of climate change, and will minimize and mitigate such damage to the maximum extent practicable for those impacts subject to the Department's authority (see the appended Mitigation Table). Implementation of the mitigation measures will occur in accordance with the terms and conditions set forth in the permit and Table 18-1 Table of Proposed Mitigation Measures by Wynn MA LLC.

____

Department of Transportation

____

By

____

[Date]

18-1 Table of Proposed Transportation Mitigation Measures by Wynn MA LLC[1]

Location	Improvement Measure	Estimated Cost
Everett:		
1. Revere Beach Parkway (Route 16)/Santilli Highway (a.k.a. Santilli Circle)	– Reconstruct intersection as a grade separated, single-point, urban diamond interchange	$13 million
2. Route 16/Broadway/Main Street (a.k.a. Sweetser Circle)	– Reconstruct circle and approaches to function as a 2-lane modern roundabout	$500,000
3. Broadway/Beacham Street 4. Broadway/Horizon Way 5. Broadway/Lynde Street 6. Broadway/Thorndike Street 7. Bow Street/Mystic Street 8. Bow Street/Lynde Street 9. Bow Street/Thorndike Street 10. Beacham Street/Robin Street 11. Broadway/Bowdoin Street	– Reconstruct Lower Broadway as a 4-lane boulevard with turn lanes at major intersections – Upgrade/replace/install traffic control signals – Reconstruct sidewalks and bicycle lanes where required – Install street trees and lighting	$4 million
13. Broadway/Norwood Street/ Chelsea Street	– Optimize traffic signal timing, phasing and coordination	$75,000
Lower Broadway Truck Route Includes reconstruction of Robin Street and Dexter Street to include heavy-duty pavement, corner radii improvements, sidewalk reconstruction (where present), drainage system modifications (minor), signs and pavement markings.	– Upgrade Robin Street and Dexter Street to serve as a truck route	$4 million
		Everett total: $21.575 million
Medford:		
1. Mystic Valley Parkway (Route 16)/Fellsway (Route 28)/Middlesex Avenue (a.k.a. Wellington Circle)	– Upgrade/replace traffic signal equipment/signs/pavement markings – Optimize traffic signal timing, phasing and coordination – Complete comprehensive planning study and community outreach program for long-term improvements including preliminary designs	$1 million
		Medford total: $1 million

[1] Note that off-site improvements may either be funded or constructed by the Proponent.

Boston:		
1. Alford Street/Main Street/Sever Street/ Cambridge Street (a.k.a. Sullivan Square)	– Interim – optimize signal timing for Maffa Way/Cambridge Street; interconnect and coordinate traffic signals, widen the Main Street approach to provide two lanes – Provide funding for study and 25% design for surface alternative	$6 million
2. Cambridge Street/I-93 northbound off-ramp	– Widen off-ramp approach – Upgrade/replace traffic signal equipment/signs/pavement markings – Optimize traffic signal timing, phasing and coordination	$1 million
3. Dexter Street/Alford Street (Route 99)	– Upgrade/replace traffic signal equipment/signs/pavement markings – Optimize traffic signal timing, phasing and coordination	$200,000
		Boston total: $7.2 million
Revere:		
1. Route 16/Route 1A/Route 60 (a.k.a. Bell Circle)	– Upgrade/replace traffic signal equipment/signs/pavement markings – Optimize traffic signal timing, phasing and coordination	$550,000
		Revere total: $550,000
Chelsea:		
2. Route 16/Washington Avenue	– Upgrade/replace traffic signal equipment/signs/pavement markings – Optimize traffic signal timing, phasing and coordination	$275,000
		Chelsea total: $275,000
		GRAND TOTAL: $30.6 million

18.2 MASSDEP PROPOSED SECTION 61 FINDINGS

These Findings for Wynn MA, LLC at Wynn Everett (EEA #15060) have been prepared in accordance with the provisions of M.G.L. c. 30, Section 61 and 301 CMR 11.00. On [DATE] the Secretary of Energy and Environmental Affairs issued a Certificate stating that the Project's Final Environmental Impact Report (FEIR), dated [DATE], adequately and properly complied with the Massachusetts Environmental Policy Act and its implementing regulations.

Wynn MA, LLC at Wynn Everett presents a unique opportunity to re-energize the Project area with a mixed-use urban resort casino development. The Project program includes a luxury hotel with 500 rooms, gaming areas, retail, dining, health club and spa, and conference/entertainment space with parking and drop-off areas. The Proponent proposes to construct substantial infrastructure improvements on Broadway (Route 99) in the vicinity of the Project site as an integral part of the Project, and the Project also includes a number of other transportation-related improvements.

As this Project is currently described, the following permits will be required from the Department:

- Sewer Connection Permit;
- Plan Approval or Environmental Results Program Certification;
- Demolition Permit;
- Asbestos Removal Permit (if required); and
- Superseding Order of Conditions (only upon appeal of local Order).

Based upon its review of the MEPA documents, the permit applications submitted to date, and the Department's regulations, the Department finds that the terms and conditions to be incorporated into the permit required for this Project will constitute all feasible measures to avoid damage to the environment, including consideration of the potential effects of climate change, and will minimize and mitigate such damage to the maximum extent practicable for those impacts subject to the Department's authority (see the appended Mitigation Table). Implementation of the mitigation measures will occur in accordance with the terms and conditions set forth in the permit.

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Department of Environmental Protection

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By

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[Date]

18.3 MASSACHUSSETS DEPARTMENT OF CONSERVATION AND RECREATION PROPOSED SECTION 61 FINDINGS

These Findings Wynn MA, LLC at Wynn Everett (EEA #15060) have been prepared in accordance with the provisions of M.G.L. c. 30, Section 61 and 301 CMR 11.00. On [DATE] the Secretary of Energy and Environmental Affairs issued a Certificate stating that the Project's Final Environmental Impact Report (FEIR), dated [DATE], adequately and properly complied with the Massachusetts Environmental Policy Act and its implementing regulations.

Wynn MA, LLC at Wynn Everett presents a unique opportunity to re-energize the Project area with a mixed-use urban resort casino development. The Project program includes a luxury hotel with 500 rooms, gaming areas, retail, dining, health club and spa, and conference/entertainment space with parking and drop-off areas. The Proponent proposes to construct substantial infrastructure improvements on Broadway (Route 99) in the vicinity of the Project site as an integral part of the Project, and the Project also includes a number of other transportation-related improvements.

As this Project is currently described, the following permits will be required from the Department:

- Access Permit.

Based upon its review of the MEPA documents, the permit applications submitted to date, and the Department's regulations, the Department finds that the terms and conditions to be incorporated into the permit required for this Project will constitute all feasible measures to avoid damage to the environment, including consideration of the potential effects of climate change, and will minimize and mitigate such damage to the maximum extent practicable for those impacts subject to the Department's authority (see the appended Mitigation Table). Implementation of the mitigation measures will occur in accordance with the terms and conditions set forth in the permit.

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Department of Conservation and Recreation

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By

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[Date]

18.4 MASSACHUSETTS GAMING COMMISSION PROPOSED SECTION 61 FINDINGS

These Findings Wynn MA, LLC at Wynn Everett (EEA #15060) have been prepared in accordance with the provisions of M.G.L. c. 30, Section 61 and 301 CMR 11.00. On [DATE] the Secretary of Energy and Environmental Affairs issued a Certificate stating that the Project's Final Environmental Impact Report (FEIR), dated [DATE], adequately and properly complied with the Massachusetts Environmental Policy Act and its implementing regulations.

Wynn MA, LLC at Wynn Everett presents a unique opportunity to re-energize the Project area with a mixed-use urban resort casino development. The Project program includes a luxury hotel with 500 rooms, gaming areas, retail, dining, health club and spa, and conference/entertainment space with parking and drop-off areas. The Proponent proposes to construct substantial infrastructure improvements on Broadway (Route 99) in the vicinity of the Project site as an integral part of the Project, and the Project also includes a number of other transportation-related improvements.

As this Project is currently described, the following permits will be required from the Department:

- Category 1 Gaming License.

Based upon its review of the MEPA documents, the permit applications submitted to date, the Commission's regulations, the Commission finds that the terms and conditions to the incorporated into the license required for this Project will constitute all feasible measures to avoid damage to the environment, including consideration of the potential effects of climate change, and will minimize and mitigate such damage to the maximum extent practicable for those impacts subject to the Commission's authority (see the appended Mitigation Table). Implementation of the mitigation measures as memorialized with the HCAs with Everett will occur in accordance with the terms and conditions set forth in the permit.

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Gaming Commission

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By

____

[Date]

Secretary's Certificate on the Environmental Notification Form

The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Deval L. Patrick
GOVERNOR

Timothy P. Murray
LIEUTENANT GOVERNOR

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July 26, 2013

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME	: Wynn Everett
PROJECT MUNICIPALITY	: Everett
PROJECT WATERSHED	: Boston Harbor
EEA NUMBER	: 15060
PROJECT PROPONENT	: Wynn MA, LLC
DATE NOTICED IN MONITOR	: June 12, 2013

Pursuant to the Massachusetts Environmental Policy Act (MEPA) (M.G. L. c. 30, ss. 61-62I) and Section 11.03 of the MEPA regulations (301 CMR 11.00), I hereby determine that this project **requires** the preparation of a Mandatory Environmental Impact Report (EIR).

Project Description

As described in the Environmental Notification Form (ENF), the project consists of the redevelopment of a 32.4-acre site in Everett as a destination resort casino. The Proponent is seeking a Category 1 gaming license pursuant to Chapter 194 of the Acts of 2011: An Act Establishing Expanded Gaming in the Commonwealth and M.G.L. Chapter 23K, Section 19, as amended by Section 16 of the Expanded Gaming Act, which authorizes the Massachusetts Gaming Commission (MGC) to license three casinos. The Act identifies three regions of the state (Region A, Region B and Region C) and authorizes MGC to permit one casino in each region. This is the second project in the Central Boston Region to undergo MEPA review. The site is located on Horizon Way and Lower Broadway (Route 99) in Everett. It will consist of a 2.9-million square foot (sf) resort and casino including: a 551 room luxury hotel tower, over 250,000 square feet (sf) of retail and dining facilities, 160,000 sf of gaming space, entertainment, and meeting facilities for business customers and large groups with approximately

3,490 structured parking spaces for employees and guests. In addition, extensive landscape and open space amenities are planned, including a four-season winter garden, waterfront features, a harbor walk, and water transportation docking facilities.

The proposed shoreline work includes the installation of a vertical steel pile bulkhead of approximately 1,230 linear feet (lf), the placement of stone revetments and the installation of pile-supported walkways over approximately 335 lf, and the removal of abandoned and deteriorated structures and remnants. The waterside work includes the dredging of approximately 12,700 cubic yards (cy) of sediment over approximately 45,800 sf to provide an adequate water depth of six feet below mean low water (MLW) to accommodate vessels.

The Host Community Agreement, which was executed with the City of Everett on April 19, 2013, indicates that the Project will bring significant investment to the city and the surrounding communities by providing 4,000 construction jobs and 4,000 permanent jobs, improved and expanded infrastructure, and support for a myriad of community programs and services. Pursuant to M.G.L Chapter 23K, a portion of the taxes on the Project's gaming revenue will be allocated to a community mitigation fund.

Project Site

The site consists of a waterfront parcel comprised of approximately 32.4 acres located in the City of Everett, adjacent to the Mystic River. Approximately 24.1 acres are upland, surrounded by shoreline and the remnants of marine structures, and approximately 8.3 acres are below mean high water (MHW) on the Mystic River. The site was formerly a Monsanto chemical manufacturing facility, is currently undeveloped, and is utilized in part as a materials storage yard. It contains very high levels of arsenic and lead, both in soil and groundwater and includes contaminated sediments in the water portion of the site. It is a disposal site subject to Massachusetts General Law Chapter 21E (MGL c.21E) and the Massachusetts Contingency Plan (MCP).

The site is also bordered to the west by the tracks of the Massachusetts Bay Transportation Authority (MBTA) Newburyport commuter rail line. The upland portions of the site are bounded by Horizon Way, Route 99, and commercial and institutional properties. For much of its history, the site was used as a chemical production facility; the site currently serves as a partial storage area for construction materials, and is presently undeveloped except for the presence of a construction trailer/office of approximately 5,200 sf. Most of the soils on the site are disturbed and comprised of fill material. The site also includes approximately 1,600 lf of shoreline with flowed tidelands. Along the shoreline is a mix of deteriorated stone seawalls, loose gravel and boulders, and rotted timber piers and pilings. The shallower portions of the shoreline also contain debris and remnants of timber structures.

Access to the site is via Horizon Way (known as Chemical Lane) which forms an unsignalized intersection with Broadway (Route 99) in Everett. The site is located in an urban, commercial/industrial area that suffered from economic disinvestment during the latter part of the twentieth century when manufacturing, import and fishery activities declined. Surrounding land uses are primarily commercial/retail, with local businesses (e.g. an auto dealership, chain restaurants, and an auto repair shop) and infill residential structures nearby. Proximate uses include Boston Water and Sewer Commission (BWSC) and Massachusetts Water Resources Authority (MWRA) properties, an MBTA

service center to the north, and the Gateway Center and Gateway Park to the west. The Department of Conservation and Recreation (DCR) owns and operates parkways in the vicinity of the site, including Revere Beach Parkway, the Fellsway and Mystic Valley Parkway. In addition, DCR owns and operates the Mystic River Reservation and the Amelia Earhart dam, a flood control structure located on the Mystic River in the vicinity of the site.

The site is bordered by the Mystic River to the south and a water embayment to the east. The embayment is approximately 350 to 500 feet wide from shoreline to shoreline (from the Project area to the upland east of the embayment containing the operations of the MWRA and BWSC). The embayment contains a former channel which was reportedly constructed in the mid-1800s. Records indicate the channel to be about 1,000 feet long with a width of 100 feet, and an original draft of 20 feet below MLW. The channel flares out at the northern end to about 250 feet wide. The channel has since shoaled, and the present depth does not exceed 13 feet below the MLW mark. The water areas adjacent to the channel are shallower than the central portion of the channel. The eastern side of the embayment is a mud flat with surface grades from about the MLW mark to about three feet above it. The mud flat contains a variety of debris, including several abandoned timber barges.

Permits and Jurisdiction

The project is subject to MEPA review and requires the preparation of a Mandatory EIR pursuant to 301 CMR 11.03(1)(a)(2), 11.03(3)(a)(5), 11.03(6)(a)(6) and 11.03(6)(a)(7) because it requires State Agency Actions and it will create 10 or more acres of impervious area, create a New non-water dependent use occupying one or more acres of waterways or tidelands, generate 3,000 or more New adt on roadways providing access to a single location, and provide 1,000 or more New parking spaces at a single location

The project requires a Category 1 Gaming License from the MGC, a Vehicular Access Permit from the Massachusetts Department of Transportation (MassDOT), a Construction and Access Permit from DCR, and Airspace Review by the Massachusetts Aeronautics Commission (MAC). It requires a Sewer Use Discharge Permit (or waiver) from the Massachusetts Water Resources Authority (MWRA) and may also require a 8(M) Permit from MWRA. It requires a Sewer Connection Permit, a Chapter 91 (c.91) License and a 401 Water Quality Certification (WQC) from the Massachusetts Department of Environmental Protection (MassDEP) and it may also require an Air Plan Approval from MassDEP. The project may also require Federal Consistency Review by Coastal Zone Management (CZM). The project is subject to the May 5, 2010 MEPA GHG Emission Policy and Protocol (GHG Policy). The project will also require a land transfer of approximately one acre from the MBTA to the City of Everett.

It will require multiple permits and approvals from the City of Everett, including an Order of Conditions from the Everett Conservation Commission (or a Superseding Order of Conditions (SOC) from MassDEP if the local Order is appealed). As part of the gaming process, the Proponent will develop Host Community Agreements with the City of Everett, which was subject to a local referendum. In addition, the ENF indicates that the Proponent will be required to enter into Surrounding Community Agreements. Federal permits appear to be limited to a National Pollutant Discharge Elimination System (NPDES) Construction General Permit. In addition, the project will require a Part 77 Airspace Review from the Federal Aviation Administration (FAA).

MEPA jurisdiction is ordinarily limited to the subject matter of required or potentially required permits; however, the subject matter of the Gaming License confers broad scope jurisdiction and extends to all aspects of the project that may cause Damage to the Environment, as defined by the MEPA regulations.

Comments on the ENF

Comments from State Agencies, municipalities, and some residents highlight the Proponent's willingness to consult with them and to provide useful information regarding the development of the project and project design. Many comments are very supportive of the proposed project and opportunities for improving environmental site conditions. Other comments express significant concern with associated environmental impacts. Several comments received on the ENF focus on non-environmental or non-jurisdictional impacts with regard to the MEPA process and/or suggest that adequate information was not provided in the ENF. MEPA is an environmental impact disclosure process; MEPA does not approve or deny a project, but serves as a public forum for a project Proponent to identify potential project-related environmental impacts and propose mitigation measures to offset these impacts prior to the issuance of State Agency permits. A key purpose of MEPA is to "assist each Agency in using (in addition to applying any other applicable statutory and regulatory standards and requirements) all feasible means to avoid Damage to the Environment or, to the extent Damage to the Environment cannot be avoided, to minimize and mitigate Damage to the Environment to the maximum extent practicable" (301 CMR 11.01(1)(a)).

The majority of comments, whether supportive of the proposed use or not, identify the challenge posed by existing congestion of the local and regional roadway system and the additional traffic expected to be generated by the project. Comments on the ENF identify other environmental concerns as well as societal impacts associated with gaming. I have received comment letters from elected officials, municipal officials, State and regional agencies, from environmental advocacy groups, from businesses, and from residents, including abutters. In addition, I have received comments from the City of Boston that assert that elements of the project are located within the City of Boston and that the project will require reviews and approvals from the City of Boston, including an Access Permit from the Public Improvements Commission (PIC). The MEPA process has provided, and will continue to provide, a valuable forum for public input; however, the Scope is limited to identification and analysis of environmental impacts associated with the proposed development. The MEPA process occurs early in the design process to identify key environmental concerns and challenges, prior to final project design. It does not generally address issues at a level of detail commensurate with those often reviewed at the local level. Information provided in the ENF regarding the project, project elements, potential impacts and potential mitigation supports the development of a Scope for this project and in many instances provides a greater level of detail than is typically required.

While several of the issues identified in comment letters are beyond the scope of review under MEPA, the Scope issued today ensures that the environmental impacts of the proposed project will be thoroughly disclosed and evaluated and that thoughtful mitigation measures will continue to be considered and evaluated by the Proponent. The DEIR will provide a detailed project description and additional information regarding the project design, alternatives, potential impacts and alternative mitigation measures and it will provide another opportunity for State Agencies and the public to provide input on the project and its environmental impacts.

SCOPE

General

The ENF includes a general description of the proposed clean-up and redevelopment of the site. It describes existing conditions and future conditions with and without the proposed project. The Draft Environmental Impact Report (DEIR) should follow Section 11.07 of the MEPA regulations for outline and content, as modified by this Scope.

Project Description and Permitting

The DEIR should include a detailed description of the proposed project and identify any changes to the project since the filing of the ENF. It should include updated site plans for existing and proposed conditions at a legible scale. Plans should clearly identify access roadways and internal driveways, proposed structures, surface and structured parking, infrastructure (e.g. drainage, wastewater, water supply) wetland resource areas, and adjacent land uses. The DEIR should identify all State permits and approvals required for the project and describe how the project will be developed consistent with associated regulatory standards and requirements. The DEIR must include information on project phasing.

The DEIR should identify the project's consistency with Executive Order 384, the Commonwealth's Sustainable Development Principles, and regional and local land use plans. To provide context for the project review, the DEIR should provide a summary of the relevant sections of the Expanded Gaming Act and associated regulations, the project application process, and the development of Host and Community agreements. If this project is selected by the MGC for the Region A resort casino license, the Proponent will be responsible for negotiating agreements with each of the affected communities. The DEIR should include information on consultation and agreements with affected communities.

As noted previously, comments from the City of Boston assert that a portion of the project is located in Boston. The DEIR should clarify municipal boundaries, identify any work that is located within the City of Boston, including remediation, and clarify whether the project requires any permits or approvals from the City of Boston. The purpose of this information is to provide an accurate description of the project site and context for the purpose of MEPA review. Jurisdiction over the determination of host community status rests with the MGC and will be addressed during the review of the Gaming License.

Alternatives Analysis

As a proposed resort casino, the project must be consistent with the Expanded Gaming Act, which was developed to create new jobs and spur economic development. The DEIR should identify elements of the project that are required by the legislation and/or regulations and the extent to which the size and associated impacts of the project are driven by gaming requirements.

The ENF references that the Proponent evaluated a number of alternatives for the size and scale of the project. According to the Proponent, the alternative selected for analysis in the ENF is comprised of the most modest development proposal (551 hotel rooms) and most likely to achieve a sufficient cost-benefit ratio to enable the realization of the many mitigation and public benefits put forth in this ENF and in the Host Community Agreement with the City of Everett.

The second alternative referenced in the ENF is a mid-range alternative that would include up to 604 hotel rooms with a hotel tower that would reach a height of 386 feet. Many land impacts, such as percentage of open space and building footprints, would not change from the 551 hotel room selected alternative in the ENF. In comparison with the selected alternative program, some impacts, such as the number of single vehicle trips generated, would change. However, the increases in impacts over the selected alternative program are not all anticipated to be directly proportional. The mid-range alternative may be feasible and fall within permit and environmental review parameters that can be achieved with avoidance and mitigation measures. The Proponent also referenced a high-range alternative that would include up to 700 rooms and a hotel that would rise to 420 feet in height. With this alternative, there would be additional sewer, water, energy, and transportation impacts; land alteration would not change significantly. Other program elements, such as the retail, casino, spa, and dining features of the Project will remain relatively consistent for each alternative. Although the alternative described in the ENF is described as the most modest development proposal (551 hotel rooms), the ENF indicates that the Proponent may explore alternatives that includes a larger number of hotel rooms. Therefore, the Proponent should evaluate further the impacts of the High-Range Alternative in the DEIR.

The DEIR should also include a realistic mixed-use development alternative to support a better understanding of the relative impacts of a resort casino compared to a mixed use development. The City of Everett is developing a Lower Broadway Master Plan which should support this analysis. The DEIR should also examine a Reduced Intensity Build alternative in the DEIR. The DEIR should identify each alternative's impacts on land alteration, creation of impervious area, impacts to wetland resource areas, public benefits associated with tidelands, traffic generation, parking, water use, and wastewater. This comparison should be provided in a tabular format with supporting narrative and conceptual site plans. It should be structured to support any alternatives analysis that will be required during permitting, such as the 401 WQC, c.91 License, etc. The Traffic and Transportation Section of the Scope identifies additional analysis that will be required for development of roadway improvements and mitigation.

I note that Congressman Michael E. Capuano, Representative Denise Provost, Senator Patricia D. Jehlen, City of Malden Mayor Gary Christenson, City of Somerville Mayor Joseph A. Curtatone, City of Somerville Alderman at Large Bruce Desmond, as well as the City of Revere, the City of Boston and the City of Medford request additional analysis of alternatives to provide a better understanding of relative impacts.

Traffic and Transportation

According to the ENF, the project at full build is expected to generate approximately 29,384 vehicle trips on an average Friday and 35,754 vehicle trips on an average Saturday. This initial trip generation estimate is based on empirical data from a study conducted for a casino project in Pittsburgh, Pennsylvania at another Wynn resort casino. The trip generation for the non-gaming component is based on the appropriate Institute of Transportation Engineers (ITE) Land Use Codes.

The ENF states that the traffic study included in the ENF was prepared in consultation with MassDOT and the City of Everett and, using available information from the Cities of Boston, Somerville, and Medford; was performed following the guidelines of the Executive Office of Energy and Environmental Affairs (EOEEA)/MassDOT Guidelines for EIR/Environmental Impact Statement (EIS) Traffic Impact Assessments (TIAs) with respect to data collection methodologies and future horizon year condition development, and was conducted in three distinct stages. The first stage involved an assessment of existing conditions in the study area and included an inventory of roadway geometrics; pedestrian and bicycle facilities; public transportation services; observations of traffic flow; and collection of daily and peak period traffic counts. In the second stage of the study, the framework for the development of future traffic conditions was established. Specific travel demand forecasts for the Project were assessed along with future traffic demands due to expected traffic growth independent of the Project. A seven-year time horizon was selected for analyses consistent with MassDOT guidelines for the preparation of Traffic Impact Assessments for Functional Design Reports (FDRs) and the anticipated build-out of the Project. The third stage of the study presents the initial framework of the transportation improvement program for the Project with specific regard to Project access and measures that are designed to reduce the impact of the Project on the transportation system.

MassDOT has confirmed that through review of other casino projects, trip generation rates based on gaming position seems to be the most reliable approach to estimate the trip generation for casino facilities. The DEIR should provide sufficient information on the size, geographic location, and traffic counts of at least three comparable sites to establish daily and peak hour trip generation rates. The DEIR should present a comprehensive analysis of the empirical data and provide background documentation describing the determination of the trip rate per gaming position to be used to revise the trip generation for the gaming component of the project.

The DEIR should also clearly document how the casino component of the project would interact with the remaining uses on the site. The site design seems to segregate the gaming from the non-gaming uses of the project as a number of proposed uses on-site would operate independently of the casino facility. Nevertheless, it should be expected that there would be a significant number of internal trips between these uses, in addition to pass-by trips along the Route 99 corridor.

Preliminary information on the development program and proposed mitigation plan is generally adequate to assist in preparing the scope of a revised transportation study for the project. The DEIR should include a transportation study prepared in conformance with EOEEA/MassDOT EIR/EIS Guidelines for Transportation Impact Assessments. The TIA study should include an in-depth assessment of the transportation impacts of the project based on thorough analysis of existing and future build conditions. The study should take into account the regional context of the project and provide a comprehensive, integrated multi-modal mitigation package that would encourage the use of the different

transportation modes to the maximum extent. In its comments, MassDOT strongly encourages the Proponent to provide similar focus to both physical and non-physical improvements and to seek creative solutions that would encourage both patrons and employees to reduce vehicular traffic.

Regional Context

Based on the nature of the land use, the trip generation for the project is expected to be drawn from a wide area within metropolitan Boston. Therefore, the project should be evaluated based on its regional nature. The key infrastructure that is expected to be used by the casino patrons to access the site should be clearly identified for the study area. The DEIR should provide a comprehensive evaluation of these infrastructure elements that includes, at a minimum, performance measures such as level-of-service (LOS), delay, transit capacity, corridor travel times, reliability, and accessibility.

The DEIR should also provide a comprehensive evaluation of the travel characteristics of the casino patrons. The proposed site is located within an urban setting, which provides several transportation options. The project abuts Route 99, a major commuter route that provides connections to numerous regional and interstate highways. It is also located within a major transit corridor with two MBTA transit stations (Sullivan Square Station and Wellington Station) within walking distance of the site and a number of bus routes in close proximity. Several bicycle routes are also within proximity to the site and provide connections to adjacent neighborhoods.

Generally, the availability and costs of different modes of transportation are two important factors that could influence urban travel and trip patterns. The site, with access to transit, highway, water, pedestrian, and bicycle facilities, provides the opportunity to develop a comprehensive multimodal mitigation plan. The Proponent should explore every opportunity as part of the mitigation program to influence the mode choice of both casino patrons and employees in order to improve overall mobility in the vicinity of the site.

Trip Distribution

The ENF includes a preliminary trip distribution based on a marketing study for the project. The DEIR should provide a gravity model or similar model that uses both the marketing study and trip generation rates to determine the origin-destination of the casino trips in the study area. Additional factors such as population, travel time, and distance should be considered in the model to determine trip characteristics for casino patrons and employees. The DEIR should provide all appropriate back-up documentation to verify how the different percentages were calculated and assigned to the roadway network and the transit system.

Mode Split

The MBTA currently operates transit service within walking distance of the site, including extensive bus service along Route 99. The DEIR should contain an analysis of what additional demand will be generated by the project. As indicated above, the ITE Trip Generation Manual does not contain trip generation factors for a facility of this type and size located in an urban setting. The Proponent should work closely with the MassDOT Office of Transportation Planning and the MBTA Service Planning Department to develop appropriate and reasonable travel demand and trip generation

characteristics. The DEIR should clearly identify how trip generation and trip assignment rates were developed and what research was done to support these rates.

The DEIR should include all back-up data used to develop trip generation estimates to corroborate any assumptions included in the DEIR. The DEIR should identify how employee demand distribution based on the nature of work shifts was incorporated into trip generation estimates. The Proponent should evaluate different shift scheduling strategies with respect to the availability of transit services with a goal of increasing transit usage by employees. Based on the determination of the project's net trip generation, the DEIR should provide a temporal distribution of traffic during a typical 24-hour period, which would help determine the peak-hour of casino traffic. This information would help identify the most critical peak periods, which should consist of the highest combination of existing roadway volumes and project generated trips. The DEIR traffic analysis should be based on these critical peak hour periods.

Once the trip generation, the modal split, and the trip distribution and assignment estimates are developed, the study area should be used and updated as defined below to create network maps for the different peak-hour analysis and the different modes.

Study Area

The proposed casino development is expected to add traffic in the surrounding communities of Everett, Medford, Malden, Chelsea, Somerville, Revere, and within the City of Boston. The project site is surrounded by a regional roadway network that includes State Routes 16, 99, 28, 38, Interstate 93, and Rutherford Avenue. Route 99 provides site access to and from the interstate system, downtown Boston, and the rest of the metropolitan roadway system. The ENF has proposed a comprehensive study area that includes a number of signalized and unsignalized intersections, circles/rotaries, and interchanges.

The Study Area includes:

1. Revere Beach Parkway (Route 16) at Santilli Highway (Santilli Circle)
2. Route 16 at Broadway and Main Street (Sweetser Circle)
3. Broadway at Beacham Street
4. Broadway at Horizon Way
5. Alford Street at Main Street, Sever Street and Cambridge Street (Sullivan Square)
6. Cambridge Street at the I-93 northbound off-ramp
7. Alford Street at Dexter Street
8. Broadway at Lynde Street
9. Broadway at Thorndike Street
10. Bow Street at Mystic Street
11. Bow Street at Lynde Street
12. Bow Street at Thorndike Street
13. Beacham Street at Robin Street
14. Broadway at Bowdoin Street
15. Broadway at 2nd Street and Corey Street
16. Broadway at Norwood Street and Chelsea Street
17. Broadway at Mansfield Street and Church Street

18. Broadway at High Street and Hancock Street
19. Broadway at Ferry Street
20. Broadway at Lynn Street, McKinley Street and Cameron Street
21. Mystic Valley Parkway (Route 16) at Fellsway (Route 28) and Middlesex Avenue (Wellington Circle)
22. Mystic Valley Parkway at Locust Street
23. Mystic Valley Parkway at the Route 16 southbound connector
24. Route 16 southbound connector at the I-93 southbound off-ramp
25. Mystic Valley Parkway at Mystic Avenue (Route 38)
26. Route 16 at 2nd Street
27. Route 16 at Spring Street
28. Route 16 at South Ferry Street
29. Route 16 at Vine Street
30. Route 16 at Vale Street
31. Route 16 at Everett Avenue
32. Route 16 at Union Street
33. Route 16 at Washington Avenue
34. Route 16 at Webster Avenue
35. Route 16 at the Route 1 Interchange
36. Route 16 at Route 1A and Route 60 (Bell Circle)
37. Rutherford Avenue at Austin Street and the Gilmore Bridge
38. New Rutherford Avenue at the I-93/Route 1 Ramps
39. New Rutherford Avenue at Chelsea Street (City Square)
40. Route 28 at Edwin H. Land Boulevard and the Gilmore Bridge
41. Main Street at Tileston Street and Oakes Street
42. Main Street at Linden Street and Waters Avenue
43. Main Street at Peirce Avenue and Bellingham Avenue

The DEIR should include a thorough analysis of Santilli Circle, Sweetser Circle, Wellington Circle, Sullivan Square, the Route1/Route 16 interchange, and the 1-93 northbound off-ramp/Cambridge Street intersection. Santilli Circle, Sweetser Circle, and Wellington Circle are primarily under the jurisdiction of DCR. The Proponent should work closely with DCR to analyze these locations and develop a mitigation program consistent with both DCR and MassDOT policies.

In addition, comments from MassDOT indicate that the Route 99/MBTA Main Driveway and the Route 99/MBTA Garage Secondary Driveway should be included in the Study Area.

Traffic Volumes

The ENF has identified an initial data collection effort to evaluate existing traffic volumes in the vicinity of the project. The data collection program consists of Automatic Traffic Recorder (ATR) counts and Turning Movement Counts (TMC) to measure the existing volumes on the roadway network at a number of locations in the study area.

A daily traffic volume summary table is presented in the ENF that indicates daily traffic volumes, evening peak hour, and afternoon peak hour volumes for the average weekday, Friday, and Saturday for a number of roadway segments. The DEIR should provide a similar table to demonstrate the increase in traffic volumes on all roadway segments based on the trip generation and distribution for the Future Build conditions.

In particular, the DEIR should include a table that compares traffic volumes for all movements for both existing and future conditions for Sullivan Square, and Wellington, Santilli, and Sweetser Circles to demonstrate existing daily volumes and peaking characteristics. These facilities currently provide access to I-93 north and several abutting communities and it is critical that LOS of these facilities is not degraded. While the peak hour of the casino resort facility is expected to be different than the peak hours of these facilities (5-6 PM vs. 7-8 PM on a Friday), these peaks are not too far apart and could result in an extended peak (5-8 PM) period of recurring congestion in the study area. The DEIR must provide the necessary information and analysis for this infrastructure in order to evaluate appropriate mitigation measures to minimize traffic impacts.

According to the ENF, traffic volumes in the study area will be projected to the year 2020 to conduct the traffic analysis, consistent with MassDOT requirements that a seven-year horizon be used to evaluate traffic impacts for most private development projects. However, in order to be consistent with all casino resorts under review, the Horizon Year 2023 or a minimum of 10-year is required for the TIA study to capture all the phases of the project and reflect full occupancy.

Site Access Alternatives Analysis

The DEIR should include a comprehensive access alternatives evaluation of potential modifications at Santilli Circle, Sweetser Circle, and Wellington Circle. The access alternatives should be consistent with MassDOT and DCR standards and provide for multimodal travel along the corridor. MassDOT recommends that this evaluation focus not only on physical improvement strategies but also on creative and innovative TDM strategies that would encourage use of alternative travel modes and reduce congestion within the study area. The DEIR should also identify access management techniques to improve overall corridor traffic along Route 99, Route 16, and local streets in the vicinity of the project. The DEIR should include sufficiently detailed conceptual plans (preferably 80-scale) for any proposed roadway improvements in order to verify the feasibility of constructing such improvements. The conceptual plans should clearly show proposed lane widths and offsets, layout lines and jurisdictions, and the land uses (including access drives) adjacent to areas where improvements are proposed. Any proposed mitigation within the state highway layout must be consistent with a Complete Streets design approach that provides adequate and safe accommodation for all roadway users, including pedestrians, bicyclists, and public transit riders.

The ENF discusses the possibility of providing shuttles, including water transportation, to various points around Boston including the Orange Line and Logan Airport. The DEIR should explain the operational characteristics of all proposed shuttles and their expected ridership. In addition, MassDOT comments note the inclusion in the ENF of the City of Everett's Master Plan proposal for a new commuter rail station. The DEIR should identify where a station could be located, how it could support the project, and the degree to which the potential station factors into transit demand.

Traffic Operations

The DEIR should present capacity analyses and a summary of average and 95th percentile vehicle queues for each intersection within the study area. The DEIR should also present merge, diverge, ramp junction, and weaving analyses for the circles/rotaries and all the interchanges identified in the study area. When in doubt regarding the appropriate analysis methodology, the Proponent should consult with MassDOT and DCR. Any proposed traffic signal along Route 99 or at other locations must include a traffic signal warrant analysis conducted according to the Manual of Uniform Traffic Control Devices (MUTCD). The DEIR should ensure that any proposed mitigation is compatible with future long-term transportation improvements under consideration by MassDOT for this area.

The DEIR should present the performance measures of these analyses in a summary format that would allow for comparison of Existing, No-Build, Future Build, and Future Build with Mitigation scenarios for all peak hour conditions. Where appropriate, the DEIR should discuss how the proposed system improvements and impacts to one mode can be measured in conjunction with the improvements and impacts of the other modes. This would be consistent with the MBTA request below to evaluate the project's impacts to bus operations at some of the intersections along its bus routes. It would also be consistent with the intent to provide a multi-modal mitigation package for the project.

The DEIR should outline a monitoring program to ensure that specifically defined mode share goals for both patrons and employees are accomplished. Along with specific steps to achieve these goals, the monitoring program should cover a minimum of five years, not two as indicated by the Proponent in the ENF. Mode share goals should be consistent with the Commonwealth's mode shift goal of tripling the share of travel in Massachusetts by bicycling, transit and walking. The DEIR should outline criteria that will be used to compare and assess the effectiveness of the Existing, Future, No-Build, and Future Build conditions as well has how these trips are distinguished between patrons and employees. In addition, the DEIR should discuss how changes to one mode can affect other modes.

Impacts to the MBTA Everett Facilities

The proposed project is directly adjacent to the MBTA's Everett Facility, an approximately 25-acre site that houses the MBTA's Bus Repair Facility and the Subway Main Repair Facility, which supports all subway operations. Also included in this campus is the MBTA Central Stores' Building, which is the MBTA's materials control center housing all materials used by the MBTA to operate and maintain trains. The Everett Central Stores accepts deliveries of all materials used throughout the bus and subway system.

As described in the ENF, the Proponent seeks permanent property rights from the MBTA for the project. First the Proponent is seeking to build the entrance to the proposed casino from Broadway across the southeast comer of the site. This access road would overlap with the main secure entrance to the site, thus requiring that the entrance be relocated. This relocation would change the orientation and the use of the site because all employee and truck deliveries are made through this gated entrance. In addition, the Proponent is interested in acquiring property from the MBTA that is currently used as a bus storage area (for buses that will be fixed or repaired in the bus maintenance building) and a piece of land that houses an extension to the Central Stores Building.

The MBTA and the Proponent have been consulting on site development and planning, discussing how to mitigate impacts to the MBTA facility, and discussing how to compensate the MBTA for the interests in real estate that the Proponent is interested in acquiring. The DEIR should provide an update on any further consultation and/or agreements reached with the MBTA.

The ENF identifies a new access road to serve the MBTA facility and to provide a Service Road into the Proponent's site. The DEIR should identify how this new entranceway would function, with a particular emphasis on ensuring that delivery vehicles as well as employees can safely enter and exit the site. The DEIR should examine whether the entrance roadway can be made wide enough so that the access to the MBTA Facility is segregated from vehicles headed to the Wynn Everett Access Roadway. For operations, safety and security reasons, the roadway would work best if the MBTA's traffic was fully segregated from all other traffic. There appears to be sufficient land available for a wide roadway so the DEIR should present alternatives to explore whether a dual/segregated roadway can be accommodated. The DEIR should also present, in graphic format, how MBTA employees will access the MBTA site from the new roadway and how employees will safely move across theMBTA site from the new Central Stores Facility. The DEIR should illustrate how MBTA vehicles will enter the facility as well as what the impacts will be at the intersection of the new entrance and Broadway.

Pedestrian Access

The ENF indicates that the project would provide pedestrian accommodations on-site with appropriate connectivity to the off-site pedestrian network in the area. The DEIR should provide a thorough inventory of all existing, planned, and proposed services, facilities, and routes for accessing the site. It should also provide an evaluation of the network to include pavement conditions, sidewalk widths, crosswalks, compliance with current accessibility standards, and existing pedestrian volumes and movements. The project should work closely with MassDOT, DCR and Walk Boston to provide a seamless connection between the existing and planned pedestrian facilities that span across multiple jurisdictions.

Bicycle Access

The ENF also proposes improvements to the existing bicycle network within the vicinity of the site. The DEIR should include a detailed inventory of the bicycle network to include bikeway types, bikeway widths, and bicycle numbers. The Proponent should identify the likely travel routes for bicyclists within the study area. The degree to which these routes can safely support bicycle travel should also be examined. The DEIR should reevaluate these routes based on the origin-destination of potential casino employees and patrons. Based on this analysis, the Proponent should consider the feasibility of expanding some of these existing routes or consider new routes to encourage bicycle travel in and around the site. Similarly, the project should work closely with MassDOT and DCR to provide a seamless connection between the existing and planned bicycle facilities that span across multiple jurisdictions. In addition, the DEIR should identify any potential impacts the project may have on the portions of the MassDOT Bay State Greenway proposed within the study area.

Water Transportation

The DEIR should include a thorough evaluation of water transportation opportunities. According to the ENF, the project would provide significant waterfront improvements to the site for recreational activities and water transportation services. These improvements would include the stabilization of the shoreline and the construction of water transportation facilities and floats for the docking of recreational and transient vessels. Docking facilities would have the capacity to accommodate ferry, water taxi, and day-trip vessels in 15 docks and floats. According to the ENF, the docking facility would accommodate both ferry and water taxi passengers within a short walking distance of the casino and hotel. These services would connect to the intermodal/land-based transit system in Boston and Everett, while also being connected to the existing ferry network in Boston. Water transportation should be incorporated into the TDM program to reduce vehicular traffic. In particular, the DEIR should investigate a cost structure that would make the ferry service competitive enough to attract a substantial amount of riders, cover the costs of the service and, in addition to serving a recreational purpose, develop as a viable alternative to driving.

Parking

According to the ENF, the project will include a parking garage to accommodate up to 3,575 vehicles. It will consist of five below-grade and six above-grade levels. The DEIR should clarify how the parking needs of the project were determined and explain the methodology used to determine the total parking required. The (ITE) Parking Generation guidance document generally provides a reasonable basis for comparison to parking requirements under local zoning, but this reference does not present parking rates for this type of land use. The DEIR should include a summary of parking needs and supply for comparable facilities based on multiple data sources. It should also determine the number of parking spaces occupied at various times of the day and identify the periods of peak use.

The DEIR should describe opportunities for reducing the total amount of parking, which should be substantial considering the mixed-use nature of the project and proximity to large retail areas and satellite parking, and consider banking parking until construction is warranted by demand. Strategic use of shared parking (on- and off-site) and provision of the minimum amount of parking necessary, reduce impervious surfaces and support the effectiveness of the TDM Program. The TDM Program should incorporate policies designed to minimize parking demand, including fees for parking and parking cash-out policies. The Proponent should consider including charging stations and preferential parking for plug-in electric vehicles into the project design. In addition, the Proponent should consider providing preferential parking for hybrid or alternatively-fueled vehicles, carpool or vanpools and provide space for a shared car program (e.g. ZipCars).

Transportation Demand Management

The DEIR should include a comprehensive TDM program that would implement measures aimed at reducing site trip generation. The TDM program should be based on specific measures that have been successful in reducing trip generation for similar facilities, and should further investigate measures that would maximize usage of existing and new pedestrian, bicycle, and transit facilities.

The DEIR should identify what type of TDM measures would be implemented to ensure that employees use transit, walk or bicycle to the greatest degree possible. Specifically, the DEIR should identify how work shifts will be scheduled so that all three shifts can utilize transit. The DEIR should describe how shifts will be laid out, and how tenants and vendors at the facility will be encouraged to schedule their shifts to promote transit usage as much as possible, while also being mindful of the weekday rush hour conditions noted above.

Additionally, the DEIR should identify whether or not employee shuttles from remote locations will be used to allow employees to park and take shuttle buses to the facility. If so, the MBTA recommends that the Proponent work with the MBTA to see if joint use parking facilities can be arranged at MBTA parking locations such as the Lynn parking garage, Wellington Station, Anderson Intermodal Facility in Woburn or other remote locations. The DEIR should also evaluate the feasibility of providing High Occupancy Vehicle (HOV) services to and from areas not well served by existing rapid transit service or existing MBTA bus routes that also serve the project site.

Transportation Monitoring Program

As part of the project mitigation program, the Proponent should commit to implementing a transportation monitoring program to be conducted upon the occupancy of the project. The goals of the transportation monitoring program will be to evaluate the assumptions made in the DEIR and the adequacy of the transportation mitigation measures, as well as to determine the effectiveness of the TDM program.

Airspace/Aviation

The project site appears to be located within protected airport approach and/or transitional airspace areas as defined by state law (MGL, Chapter 90, Section 35B) and Federal regulations (Federal Aviation Regulation Part 77, Objects Affecting Navigable Airspace). State and federal notice is required for proposed buildings, parking lots/structures, lighting (within parking lot, street lights/traffic lights, temporary lighting during construction) and use of cranes.

Comments from Massport indicate that the proposed building heights are at or close to several airport approach and or transitional areas as defined by state law and federal regulations and, therefore, careful analysis of potential impacts is warranted. The Proponent should consult with Massport and the MassDOT Aeronautics Division regarding project elements, including lighting and consideration of reflective building materials or use of solar panels, to avoid glare that could impact aviation.

Greenhouse Gas (GHG) Emissions

The ENF identifies a strong commitment to sustainable development, including certification of the project by the US Green Building Council's Leadership in Energy and Environmental Design (LEED). It describes the Proponent's commitment to environmental sustainability. The project offers a wide

variety of opportunities to introduce innovative programs and establish the resort as a leader in environmental sustainability; its operating characteristics – including continuous operations, designs that include large open gaming rooms with varying levels of occupancy over the course of a day provide a strong incentive for doing so. The ENF indicates that the Proponent will consult with environmental and energy programs, including the Massachusetts Clean Energy Center, MassDEP and the Department of Energy Resources (DOER) to identify opportunities and technical assistance resources for design and implementation of projects or pilot programs.

The project is subject to review under the May 5, 2010 MEPA GHG Policy. The DEIR shall include an analysis of GHG emissions and mitigation measures in accordance with the standard requirements of this Policy. The analysis should quantify the direct and indirect GHG emissions associated with the project's energy use and transportation-related emissions. Direct emissions include on-site stationary sources, which typically emit GHGs by burning fossil fuel for heat, hot water, steam and other processes. Indirect emissions result from the consumption of energy, such as electricity, that is generated off-site by burning of fossil fuels, and from emissions associated with vehicle use by employees, vendors, customers and others. The DEIR should identify and commit to mitigation measures to reduce GHG emissions.

The DEIR should include a GHG emissions analysis that calculates and compares GHG emissions associated with: 1) a Massachusetts Building Code-compliant baseline (based on the Massachusetts Building Code 8th Edition (Chapter 780 CMR 13.00) which has been amended to adopt and integrate either the current version of the International Energy Conservation Code (IECC) or ASHRAE 90.7-2007; and, 2) a Preferred Alternative that includes energy efficiency design measures. The Policy requires Proponents to use energy modeling software to quantify projected energy usage from stationary sources and energy consumption and modeling should be developed in accordance with ASHRAE 90.1–2007 Appendix G.

The GHG analysis should clearly demonstrate consistency with the objectives of MEPA review, one of which is to document the means by which Damage to the Environment can be avoided, minimized and mitigated to the maximum extent feasible. The Proponent should identify the model used to analyze GHG emissions, clearly state modeling assumptions, explicitly note which GHG reduction measures have been modeled, and identify whether certain building design or operational GHG reduction measures will be mandated by the Proponent to future occupants or merely encouraged for adoption and implementation. The DEIR should include the modeling printout for each alternative and emission tables that compare base case emissions in tons per year (tpy) with the preferred alternative showing the anticipated reduction in tpy and percentage by emissions source (direct, indirect and transportation). Other tables and graphs may also be included to convey the GHG emissions and potential reductions associated with various mitigation measures as necessary.

The DEIR should present an evaluation of mitigation measures identified in the GHG Policy Appendix. The feasibility of each of the mitigation measures should be assessed for each of the major project elements, and if feasible, GHG emissions reduction potential associated with major mitigation elements should be evaluated to assess the relative benefits of each measure. The DEIR should explain, in reasonable detail, why certain measures, which could provide significant GHG reductions, were not selected - either because it is not applicable to the project or is considered technically or financially infeasible.

The proposed project will generate between 29,384 and 35,754 daily vehicle trips, thereby considerably increasing GHG emissions. The DEIR must specify GHG emissions from these proposed increased vehicle trips, in addition to GHG generation from building operating systems and site use. The DEIR should identify whether the project will include fleet vehicles. For the purposes of the GHG Policy, fleet vehicles are generally considered to be a source of direct GHG emissions from vehicles used by a project Proponent in the everyday operation of a facility. In this case, these may include shuttle buses for employees and patrons, landscaping or catering vehicles, etc. The Proponent should consult the Policy for further direction on how to estimate direct mobile source GHG emissions and contact the MEPA office to discuss appropriate assumptions and methodology prior to conducting the analysis.

The buildings constructed for this proposed project should be designed for maximum energy efficiency. I appreciate the Proponent's commitment to achieve a 19.1% reduction in energy and a 20.6% reduction below the base case. The DEIR must clearly demonstrate how these reductions will be be obtained through quantification of the projected energy consumption and GHG emissions as modeled for the building in both the base case and the mitigated as-proposed case.

The stationary source GHG emissions reductions are attributable to a use of high efficiency chiller plant, demand control ventilation, demand control exhaust ventilation, energy recovery ventilation, cool roofs, high performance building envelope, skylights and daylighting controls, lower light power density (LPD) for the hotel and metal halide lighting for parking garages, energy efficient refrigeration, low energy gaming machines, EnergyStar appliances, and occupancy controls.

The DEIR should consider opportunities for greater energy efficiency at the parking garage. According to Green Building Elements, parking garages use about 15 percent of the energy of the associated building and there are opportunities to reduce this energy demand significantly by providing about 40 percent openness for ventilation, daylighting, lighting sensors and advanced controls, selection of energy efficient equipment, (e.g., fans, elevators, security cameras), and passive designs such as guard houses with heat recovery systems.

In light of the early stage of design, I expect the Proponent will consider renewable sources thoroughly in the DEIR to ensure that alternative energy is incorporated into the project. The Proponent should consider combined heat and power (CHP) is as a promising energy alternative for this project. Because three quarters of the energy demand at casinos relates to heating and lighting, CHP can be a cost effective approach to reducing GHG emissions. It can also create greater reliability for electricity and greater control over uncertainties associated with energy prices. The DEIR should evaluate the feasibility of CHP. The analysis should include consideration of one of the major benefits of a CHP system – the ability to produce off-grid power. I encourage the Proponent to consult with DOER regarding this analysis to ensure that compliance with the building code and site and source energy accurately reflect the benefits of CHP.

The DEIR should include details regarding the potential output of one or multiple rooftop PV systems, identify areas suitable for ground-mounted solar arrays, an economic analysis associated with a first-party or third party installation, and for potential rooftop systems, how mechanicals can be arranged to maximize the area that could be dedicated to PV uses. This analysis of both roof-mounted and

ground-mounted PV systems should include assumptions about available rooftop or land areas, potential system outputs, and installation costs ($/watt). I recommend that the Proponent consult the CEC to obtain current data on average $/watt installation costs for PV systems in Massachusetts (*Commonwealth Solar Installers, Costs, Etc.*, available at http://www.masscec.com/index.cfm/page/Downloads-and-Resources/pid/11163). If PV is not financially feasible, I request that the Proponent commit in the DEIR to revisit the PV financial analysis on a regular timetable and to implement PV when the financial outcomes meet specified objectives. The DEIR should include a feasibility analysis of implementing a solar hot water system to meet some or all of the demand for the hotel uses. This evaluation should be compared to the opportunities afforded by the installation of roof-top systems solely to offset electricity usage.

I also encourage the Proponent to consult with MassDEP on analysis of anaerobic digestion use for the project. The Commonwealth has announced its intent to institute a ban on the direct disposal of food waste into landfills and incinerators in 2014 for large scale food waste generators; the ban might include casinos, particularly if large quantities of food are served. I encourage the Proponent to implement measures consistent with MassDEP food waste goals such as separation and non-disposal options. The DEIR should include a feasibility study of the construction of an on-site anaerobic digestion facility. This technology may allow for a unique on-site energy source to reduce project-related GHG emissions, while managing food waste in a manner consistent with MassDEP goals.

Comments from MassDEP and DOER provide additional guidance regarding mitigation measures that should be explored as part of the GHG analysis, as well as resources to assist in preparation of the analysis. In addition, I note that many other commenters, including the City of Boston Environment Department, the Metropolitan Area Planning Council (MAPC), MassAudubon and other advocacy organizations identify the design of a highly efficient, low energy use project as a priority and identify additional measures and programs for analysis.

As noted by MassDEP, the Proponent should evaluate the effectiveness of the TDM measures (which were addressed in more detail in the Traffic and Transportation Section) and adoption of additional sustainable design measures for which GHG reductions cannot be easily quantified, such as recycling efforts and water conservation measures. Additional GHG reductions can be achieved through effective materials management during the design, construction, and operations phases of the project. These measures will be considered when evaluating whether the project can mitigate its GHG emission to the greatest extent practicable.

Additional water demand and wastewater generation associated with the project exceeds 300,000 gpd. Consistent with the GHG Policy, the DEIR should include an analysis of potential GHG emissions related to the treatment and conveyance of wastewater or withdrawal, treatment and conveyance of potable and/or non-potable water. To assist in calculation of these potential GHG emissions, the MEPA office and MassDEP have provided average energy use data for treatment facilities, including those located within an MWRA community, which are posted on the MEPA website.

The project may include leasing of space to tenants and, therefore, certain energy efficiency measures may require a level of design that will be deferred to the tenants' selection or which the developer may be less willing to commit to in advance because all the energy savings may inure to the tenants' benefit depending on the lease arrangements. While I encourage the Proponent to adopt those

GHG reduction measures that are integrated into the building's core, shell and infrastructure, some measures may be transient or dependent on operational procedures implemented by the future occupant. In those instances, the Proponent should consider reasonable measures to educate and create incentives for the tenants to adopt energy efficiency/renewable generation measures. The DEIR should identify which project elements will be owned by the Proponent and which may be leased. It should address the Proponent's commitment to providing energy efficiency consulting services and information and/or developing a tenant manual that requires or strongly supports GHG reduction measures.

The DEIR should include a commitment to provide a self-certification to the MEPA Office at the completion of each building or group of buildings. It should be signed by an appropriate professional (e.g. engineer, architect, transportation planner, general contractor) indicating that all of the GHG mitigation measures, or equivalent measures that are designed to collectively achieve identified reductions in stationary source GHG emission and transportation-related measures, have been incorporated into the project. The Proponent should refer to the Policy for additional guidance on the GHG analysis. MEPA, MassDEP and DOER staff are available to assist with these efforts and I encourage the Proponent to consult with them regarding the analysis prior to submission of the DEIR.

Adaptation

The project must be designed to comply with Massachusetts State Building Code requirements for structures within the floodplain and local requirements. Current rates of sea level rise, as well as projections for accelerated trends, pose significant threats to coastal development and resources, potentially increasing the height of storm surges and associated coastal flooding frequencies. The ENF indicates preliminary consideration of this issue and identifies how the project is designed to address potential impacts. Comments on the project, including comments from CZM highlight the importance of incorporating consideration of sea level rise and the potential for more frequent and intense storms into the project design. Development of adaptation measures should be guided by sea level rise scenarios identified in the Massachusetts Climate Change Adaptation Report and, as suggested by CZM, include evaluation of impacts of two feet of sea level rise. The DEIR should provide details related to the final elevation of the site and proposed building elevations.

Because the resort is designed to serve a significant numbers of patrons and is located in an area that could be directly affected by more severe storms and increased flooding, the Proponent should consider measures to generate on-site power in the event of disruptions in service to the electrical grid. As noted previously, the ability to produce off-grid power is one of the major benefits of a CHP system.

Air Quality

In accordance with the State Implementation Plan (SIP) for ozone attainment, the Proponent must conduct an indirect source review analysis because this is a mixed-use project generating 6,000 or more new adt. This analysis should be conducted in accordance with MassDEP Guidelines for Performing Mesoscale Analysis of Indirect Sources. The Proponent should consult with MassDEP for guidance and for confirmation of the appropriate study areas. If hydrocarbon emissions associated with the Build scenario are greater than the No Build scenario, the Proponent is required to provide mitigation, including the development of a TDM Program.

The MassDEP comment letter identifies potential certifications and permits that may be required for on-site energy sources such as boilers, stationary turbines, emergency generators, etc. The DEIR should identify certification and/or permits that likely will be required for proposed project elements.

Wetlands

The Project Site, comprised of 32.4 acres, is located within and adjacent to the tidally-affected portions of the Mystic River below the Amelia Earhart Dam. Various coastal resources located on the site are regulated under state, federal, and local laws. The following Resource Areas are present within the site: Land Under the Ocean (LUO); Coastal Beach and Tidal Flats; Coastal Bank; Land Containing Shellfish; Salt marsh; Riverfront Area; and Land Subject to Coastal Storm Flowage (LSCSF). The site also includes a regulated Buffer Zone which, while not a Resource Area, is a protected zone extending 100 feet inland from the Coastal Bank.

The DEIR should include a description of the wetland resource on-site and off-site where project-related work or mitigation is proposed. The DEIR should quantify the extent of unavoidable wetland alteration, including both temporary and permanent impacts. Plans at a readable scale should show the boundaries of all wetland resource areas and areas to be altered. The DEIR should explain how the project will comply with the applicable performance standards as required in the wetlands regulations and demonstrate that wetland alteration has been avoided and minimized to the extent feasible through preparation of an alternatives analysis. Where opportunities exist, the DEIR should contain revised site designs in order to avoid and minimize wetland impacts. The DEIR should include plans depicting and quantifying wetlands restoration areas and information on how altered wetland functions will be restored.

The project will be reviewed by the Everett Conservation Commission for its consistency with the Wetlands Protection Act and associated regulations (310 CMR 10.00), including stormwater management standards. The DEIR should demonstrate that the project can be designed and constructed to be consistent with performance standards. It should include plans at a reasonable scale that clearly delineate all applicable resource area boundaries including Riverfront Area, buffer zones, 100-year flood elevations, and tidelands. The DEIR should quantify the project's estimated impact on each resource area. It should describe the nature of all impacts that cannot be avoided including grading, clearing and construction-related disturbances and whether they are temporary or permanent in nature. The DEIR should identify and evaluate all feasible methods to reduce impervious surfaces, including reduced parking ratios, banking of parking, and narrow roadways.

The DEIR should include a stormwater management plan that demonstrates that source controls, pollution prevention measures, erosion and sediment controls and the drainage system will comply with the stormwater standards for water quality and quantity both during construction and post-development. If subsurface infiltration is proposed, the DEIR should demonstrate that soils and groundwater conditions are suitable for such discharges. It should include a commitment to develop an operations and management plan to ensure the long-term effectiveness of the stormwater management system. The locations of detention basins, distances from wetland resource areas and the expected quality of the

effluent from the basins should be identified. The Proponent will be required to prepare a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the NPDES Permit.

The Proponent should carefully review comments from MassDEP, CZM, DMF and others regarding wetlands, drainage issues, and in-water and shoreline work. The DEIR should include analysis of alternative approaches to the shoreline and in-water work that rely less on structural solutions. It should clearly identify design criteria considered, including consideration of clean-up and remediation needs. The ENF indicates the Proponent will consider incorporation of Low Impact Development (LID) techniques. The DEIR should address these alternatives in more detail.

Stormwater

This project presents a unique opportunity for the Proponent to showcase innovative stormwater and green infrastructure techniques. Stormwater runoff impacts during construction and post-construction must be evaluated in the DEIR, including both on-site and off-site impacts associated with proposed roadway mitigation. It is expected that the stormwater management report will be sufficiently detailed to demonstrate that source controls, pollution prevention measures, erosion and sediment controls, and the post-development drainage system will be designed in compliance with the MassDEP stormwater management regulations, pursuant to 310 CMR 10.05(6)(k) and all applicable performance standards, including Standard 5 for Land Uses with Higher Potential Pollutant Loads and Critical Area for shellfish growing areas.

The DEIR should demonstrate that the project's water quality and quantity impacts would be controlled with best management practices (BMPs) for consistency with the applicable Storm Water Program under the NPDES Phase II Stormwater General Permits for the City of Everett. Because there is a Draft Pathogen TMDL for the Boston Harbor Watershed that may be finalized prior to the DEIR that applies to impaired and non-impaired waterbodies in the vicinity of the project site, the stormwater management study should consider how stormwater controls conform to the TMDL and the implementation strategies established for pathogens. The DEIR should also present a thoughtful analysis of the effectiveness of the stormwater management system in controlling the recognized water quality imparement, taking into consideration pollution prevention, source control, BMPs, and system maintenance.

I recommend the Proponent collaborate with MassDEP and the Mystic River Watershed Association (MyWRA) in the development of a TMDL for impairments in the Mystic River, and consider contributing to the MyWRA program to eradicate water chestnuts. The Proponent should consult with the MyWRA and MassDEP for guidance on the appropriate programs and measures to implement in addressing the water quality impairments in the river.

The DEIR should include information regarding proposed base flood elevations of new buildings and specific flood-proofing measures. Potential impacts associated with sea level rise should be taken into account in the site design. The recently published "Preparing for the Rising Tide" (The Boston Harbor Association, February, 2013) offers guidance and examples of sea level rise in Boston and surrounding communities.

Tidelands

According to the ENF the site is comprised of flowed tidelands, filled (formerly flowed) tidelands, and non-jurisdictional upland within the City of Everett and the City of Boston. Of the approximately 32.4-acre site, approximately 8.3 acres are within flowed tidelands (below mean high water), 11.3 acres are within filled tidelands, and 12.8 acres are within non-jurisdictional upland.

MassDEP indicates in its comments that it will issue a Determination of Applicability in the near future that identifies a slightly greater area of jurisdiction. MassDEP believes that the entirety of the peninsula portion of the project site is filled tidelands. MassDEP concurs with the ENF that all filed tidelands are private tidelands. The DEIR should include the revised jurisdiction map and it should be used in subsequent MEPA documents.

I remind the Proponent that the Chapter 91 Waterways regulations at 310 CMR 9.51(3)(d) limit the coverage of filled tidelands by non-water-dependent use buildings to a maximum of 50 percent of the filled tideland area. MassDEP has determined that unless a substitution is granted for this exceedance of allowable site coverage, the area of non-water-dependent use buildings must be reduced to comply with the standard. In addition, the project is also subject to the height limitation for non-water-dependent use buildings at 310 CMR 9.51(3)(e). The portion of the hotel tower within Chapter 91 jurisdiction exceeds the maximum height allowed by the regulations. According to the ENF, a 300-foot tower is proposed in an area where the maximum allowed height would be 225 feet. Therefore a substitution is required in order for MassDEP to authorize the proposed tower.

The DEIR should include additional details regarding the landside public facilities and structures proposed to be constructed in the water. Also, the project proposes to place fill along portions of the shoreline in connection with reconstructing the bulkhead. This filled area is to be used as part of the publicly accessible waterfront walkway. While this fill may be permitted under the Waterways Regulations, 301 CMR 9.32(1)(a)(2) requires that reasonable measures be taken to minimize the amount of fill.

The ENF acknowledges that there is not enough open space on the site to meet Chapter 91 regulations. In response, the Proponent simply states that this issue will be addressed in future designs and/or through alternative standards provided as part of the Everett Municipal Harbor Plan process. The DEIR should include an analysis of alternatives that would meet the Chapter 91 requirements.The DEIR should address the status of the MHP review and approval process. I note that the MHP process should be concluded prior to filing the Final EIR to ensure that consistency of the MHP and c.91 regulations can be established during MEPA review.

Projects on tidelands are subject to the provisions of *An Act Relative to Licensing Requirements for Certain Tidelands* (2007 Mass. Acts ch. 168). Consistent with Section 8 of this legislation, I must conduct a Public Benefits Review as part of the EIR review of projects located on other tidelands that entail new use or modification of an existing use and I must make a Public Benefits Determination within 30 days of the issuance of the Certificate on the Final EIR (FEIR).

Section 3 of this legislation requires that any project that is subject to MEPA review and proposes a new use or structure or modification of an existing use or structure within landlocked

tidelands address the project's impacts on tidelands and identify measures to avoid, minimize or mitigate any adverse impacts on these rights.

> *"In making said public benefit determination, the secretary shall consider the purpose and effect of the development; the impact on abutters and the surrounding community; enhancement to the property; benefits to the public trust rights in tidelands or other associated rights, including, but not limited to, benefits provided through previously obtained municipal permits; community activities on the development site; environmental protection and preservation; public health and safety; and the general welfare; provided further, that the secretary shall also consider the differences between tidelands, landlocked tidelands and great pond lands when assessing the public benefit and shall consider the practical impact of the public benefit on the development."*

The DEIR should address each of the considerations identified in the legislation and provide information to support this review.

Marine Fisheries

Several diadromous fish species utilize the Mystic River, including alewife (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*), white perch (*Morone Americana*), American eel (*Anguilla rostrata*), and American shad (Alosa sapidissima). The project site also includes and intertidal mudflats. The intertidal and subtidal areas of the project site are considered suitable habitat for shellfish and some portions of the proposed dredging may result in a permanent loss of this resource and habitat.

MarineFisheries recommends a time of year restriction for no in-water work from February 15 to September 15 for the protection of diadromous fish and shellfish critical life stages. Proposed dredging and fill activities may permanently alter the seafloor and therefore may be considered a habitat conversion of tidal land. A permanent impact of this type may be subject to mitigation by the U.S. Army Corps of Engineers and other permitting agencies.

Dredging

The ENF proposes to dredge approximately 12,700 cubic yards of material in connection with the transient docks and water transportation dock. However, several commenters have stated that more extensive water quality/sediment sampling may show a need to expand the area to be dredged. The DEIR should show how this work will be consistent with the Phase III Remedial Action Plan under the Massachusetts Contingency Plan/Chapter 21E. Dredging will require both a Chapter 91 permit and a 401 WQC pursuant to 314 CMR 9.00. The ENF states that the dredging will restore a previously-dredged channel. The Proponent should provide documentation of previously approved dredging authorization in DEIR and the Chapter 91 and WQC applications. The DEIR should provide additional information regarding the area to be dredged, the physical and chemical characteristics of the sediments, and benthic habitat present in the proposed dredge footprint.
Pursuant to 314 CMR 9.07(2)(b)(5), a project-specific sampling and analysis plan must be prepared for the proposed dredging.

Water Use

According to the ENF, the project will use 392,700 gallons per day (gpd) of water. The DEIR should identify and describe existing and proposed water infrastructure. The ENF identifies a range of water conservation measures that will be incorporated into the project. The DEIR should identify and describe commitments to water conservation and estimate associated decreases in demand. The hotels, in particular, provide numerous opportunities to reduce daily water demand by guests including the use of low-flow fixtures, modifications or the use of BMPs associated with laundry and food services, and guest education. The Proponent should consider installing timers, soil moisture indicators and rainfall sensors in any in-ground sprinkler systems. The DEIR should explore opportunities for greywater recycling for use in sanitary facilities, irrigation, or ornamental uses (e.g. fountains). The DEIR should provide an analysis of potential water supply demand reductions that may be achieved through the implementation of greywater recycling infrastructure and feasibility of implementing such a system.

Wastewater

According to the ENF, the project will generate 357,000 gpdof new wastewater flow that will be conveyed to MWRA's sewer system. This quantity of new flow exceeds the threshold for requiring a Sewer Connection Permit from the MassDEP and must comply with MassDEP Infiltration and Inflow(I/I) offset requirements.

The DEIR should include updated projections of wastewater generation, describe existing and proposed wastewater infrastructure for the entire site, and identify measures to minimize wastewater demand and mitigate project impacts.

Comments from MassDEP and MWRA indicate that the DEIR should include revised wastewater flow projections. Projections should be developed consistent with 314 CMR 7.15 or 310 CMR 15.203 (2) through (5). Existing flows that will be maintained may be evaluated using existing meter data. The DEIR should detail the method for projecting wastewater flows.

Comments from MassDEP and the MWRA indicate that the Proponent will be required to participate in the MWRA flow control program to remove extraneous clean water, infiltration and inflow (I&I) from the sewer system. The Proponent will be required to offset flows associated with the project by removing I/I on a 4:1 basis of 4 gallons removed for every gallon generated. Given the scope and impacts of the proposed project, and the need for I/I mitigation, the Proponent should arrange to meet with MassDEP and the City of Everett to develop a plan to meet the mitigation requirements of the MassDEP I/I Policy.

Once the hotel is completed and if the Proponent intends to operate a laundry on the premises, a Sewer Use Discharge Permit is required from the MWRA for the discharge of laundry effluent into the sanitary sewer system. The Proponent must also comply with 360 C.M.R. 10.016, if it intends to install gas/oil separator(s) in the enclosed car parking garages.

Hazardous Waste

The project site contains very high levels of arsenic and lead, both in soil and groundwater and contaminated sediments in the water portion of the site. The project area is a disposal site, subject to MGL c.21E and the MCP. The current owner, FBT Everett Realty, LLC (FBT), submitted a Tier II Classification Submittal on February 11, 2010, in which FBT sought to reestablish response action deadlines as an Eligible Person, in accordance with 310 CMR 40.0570. On February 10, 2012, FBT submitted a Phase II Comprehensive Site Assessment Report to MassDEP for the disposal site. FBT has since failed to submit a Phase III Remedial Action Plan and Phase IV Remedy Implementation Plan by the respective deadlines established at 310 CMR 40.0570(5). According to MassDEP, the property site is not in compliance at this time.

Prior to conducting Comprehensive Response Actions at the disposal site, the Proponent must submit to MassDEP either a new Tier II Classification Submittal or a Tier II Transfer Submittal, pursuant to 310 CMR 40.0560(8). If the Proponent meets the requirements in 310 CMR 40.0570 and intends to prepare a new Tier II Classification Submittal to reestablish response action deadlines as an Eligible Person, that submittal must be made to MassDEP within 120 days of the date when the Proponent becomes an owner of the disposal site. If the Proponent submits a Tier II Transfer Submittal to MassDEP instead, the disposal site would remain in noncompliance until the submittals required by 310 CMR 40.0560 or 40.0570 are received by MassDEP. The DEIR must fully address these issues.

The Proponent is advised that excavating, removing and/or disposing of contaminated soil, pumping of contaminated groundwater, or working in contaminated media must be done under the provisions of MGL c.21E and the MCP. In addition, the project Proponent may not manage contaminated media without prior submittal of appropriate plans to MassDEP, which describe the proposed contaminated soil and groundwater handling and disposal approach, and health and safety precautions.

The DEIR should provide an estimate of clean-up costs, clearly identify who will be responsible for conducting and funding the clean-up, and identify how impacts to the Mystic River and surrounding communities will be prevented. The DEIR should confirm that the project will include a full and comprehensive cleanup of the entire site to the highest possible standards. Because contamination at the site is known, appropriate tests should be conducted well in advance of the start of construction and professional environmental consulting services should be readily available to provide technical guidance to facilitate any necessary permits.

The DEIR must state if dewatering activities are to occur at the site with contaminated groundwater, or in proximity to contaminated groundwater where dewatering can draw in the contamination. The Proponent must implement a plan to properly manage the groundwater and ensure site conditions are not exacerbated by these activities. In addition, the Proponent must conduct real-time air monitoring for contaminated dust and implement dust suppression prior to excavation of soils, especially those contaminated with compounds such as metals and PCBs. The DEIR should address how this monitoring will occur.

The EPA, the MassDEP Bureau of Waste Prevention, and the MassDEP Bureau of Resource Protection may establish requirements to ensure that contaminated soil and sediments are managed in accordance with all applicable laws and regulations.

Historic Resources

The site is immediately adjacent to the Revere Beach Parkway (EVR.AA), which is listed in the State and National Registers of Historic Places. The ENF indicates that potential significant alternations to the Santilli Circle (EVR.911) and Sweetser Circle (EVR.916) may be a part of this project, including the conversion of Santilli Circle into a diamond interchange. Santilli Circle is not a contributing element to the Revere Beach Parkway; however, changes to these features could impact the overall historic resource that is the Revere Beach Parkway. The Massachusetts Historical Commission (MHC) requests that the DEIR clearly identify any and all potential alterations to the Revere Beach Parkway, including designs for Santilli Circle and Sweetser Circle.

No record of any underwater archaeological resources was found within the proposed project boundaries. However, due to the high archaeological potential of the project vicinity, the Board of Underwater Archaeology (Board) recommends an archaeological assessment of the submerged portion of the project area (and inter-tidal zone). I advise the Proponent to consult with the Board on this topic and address the issues in the DEIR.

Construction Period Impacts

The EIR should include a discussion of potential impacts associated with construction activities (including but not limited to noise, vibration, dust, and traffic flow disruptions) and propose feasible measures to avoid or eliminate these impacts. It should address comments from MarineFisheries regarding time-of-year restrictions.

The project must comply with MassDEP's Solid Waste and Air Quality Control regulations, pursuant to M.G.L. Chapter 40, Section 54.

The Proponent should mitigate the construction period impacts of diesel emissions to the maximum extent feasible. This mitigation may be achieved through the installation of after-engine emission controls such as diesel oxidation catalysts (DOCs) or diesel particulate filters (DPFs), or the use of equipment that meets Tier 3 or Tier 4 emission standards for non-road construction equipment. Comments from MassDEP note that project contractors are required to use ultra low sulfur diesel (ULSD) fuel (15 parts per million sulfur) in off-road engines and provides additional resources to assist with implementation of this program.

Mitigation

The DEIR should include a separate chapter that identifies all mitigation measures. This chapter should also include separate draft Section 61 Findings for each State Agency that will issue permits for the project. The draft Section 61 Findings should contain clear commitments to implement mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and include a schedule for implementation. In addition, it should include a commitment to provide a self-certification document indicating that GHG measures have been incorporated into the project.

Responses to Comments

The DEIR should contain a copy of this Certificate and a copy of each comment letter received. To ensure that the issues raised by commenters are addressed, the DEIR should include responses to comments. This directive is not intended to, nor shall it be construed to, enlarge the scope of the DEIR beyond what has been expressly identified in this certificate.

Circulation

The Proponent should circulate the DEIR to the individuals and organizations who commented on the ENF, to any State Agencies from which the Proponent will seek permits or approvals and to any parties specified in section 11.16 of the MEPA regulations. In addition, the DEIR should be made available for review at the Everett, Boston, Charlestown, Malden, Revere, Somerville and Medford Public Libraries.

July 26, 2013
Date

Richard K. Sullivan Jr.

RKS/ACC/acc

Comments received:

6/30/13	Kay Conway
7/2/13	Board of Underwater Archaeological Resources
7/2/13	Boston Harbor Island Alliance
7/3/13	Martha Abdella
7/4/13	M. Kocol
7/4/13	Kate Altieri

7/8/13	Charles A. Boy, Jr.
7/8/13	Peter Cipriani (2 letters)
7/9/13	Wynn Resorts Development
7/9/13	Representative Wayne A. Matewsky
7/12/13	Mass Audubon Advocacy Department
7/12/13	Massachusetts Port Authority
7/12/13	City of Boston: Brian Swett, Chief of Environment and Energy, Thomas J. Tinlin, Commissioner Boston Transportation Dept., and Elizabeth Dello Russo, Exec. Director, HCAC
7/12/13	Matthew Desmond
7/12/13	Congressman Michael E. Capuano
7/12/13	Bruce M. Desmond, Alderman at Large
7/12/13	City of Revere Planning and Community Development
7/12/13	Representative Denise Provost and Senator Patricia D. Jehlen
7/12/13	Alexander Pancic
7/11/13	Evmorphia Stratis
7/11/13	Ivey St.John
7/11/13	Federal Realty (2 letters)
7/11/13	Division of Marine Fisheries
7/11/13	Mark Rosenshein, CNC and Tom Cuhna, CNC
7/11/13	Malden Office of the Mayor
7/11/13	Stefanie Hanlon-DuBois
7/11/13	Coastal Zone Management
7/12/13	Medford Office of the Mayor
7/12/13	Medford Police
7/12/13	Medford Fire Department
7/12/13	Medford Office of Community Development
7/12/13	Medford Department of Public Works
7/12/13	Medford Office of Energy and Environment
7/12/13	Fort Hill
7/12/13	Somerville Office of the Mayor
7/12/13	Steffen Koury
7/12/13	John Vitagliano(2 letters)
7/12/13	Jennifer Rossi
7/12/13	Chelsea Executive Office
7/12/13	Walk Boston
7/12/13	Richard C. Lynds, Esq.
7/12/13	Kenneth J. Krause
7/12/13	Mass Department of Transportation (2 Letters)
7/12/13	MAPC
7/13/13	Bike to the Sea, Inc.
7/15/13	Post Road Residential
7/15/13	The Boston Harbor Association
7/15/13	Mystic River Watershed Association
7/15/13	Mass Department of Conservation and Recreation (2 letters)
7/15/13	MWRA

7/15/13	Massachusetts Historical Commission
7/15/13	Matthew Desmond
7/15/13	Bruce M. Desmond
7/15/13	DEP/NERO
7/16/13	Representative Carlo Basile and Senate Chair Michael Rush
7/15/13	Representative Kathi-Anne Reinstein
7/18/13	Dan Jaffe
7/18/13	Christine
7/19/13	Katherine Alitz
7/18/13	Salvatore LaMattina, City Councilor
7/19/13	Michael Bear
7/23/13	Kristen & Nelson Flores
7/23/13	Tom Cobb
7/23/13	Tony Reidy
7/23/13	Michal Bornhorst
7/23/13	Ronald Lent
7/23/13	Kateri McGuinness
7/23/13	Bette Task
7/23/13	Lynne C. Levesque
7/23/13	Boston Parks and Recreation Department
7/23/13	Mary Guy
7/23/13	Boston Transportation Department
7/23/13	Jennifer B. Herlihy
7/23/13	Rutherford Corridor Improvement Coalition
7/23/13	Representative Eugene L. O'Flaherty
7/23/13	Jon-Luc Dupuy
7/22/13	Charlestown Waterfront Coalition
7/23/13	Mass Department of Energy Resources
7/23/13	Suzanne Crowther
7/23/13	Dan Kovacevic